

AUGUST
1954

chemical processing

for men who manage

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CUTS ANALYSIS TIME FROM 90 TO 20 MINUTES
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Which of these Fluorine Compounds do you need?

✓ for process uses

✓ for research

THAT'S INTERESTING

FLUORINE

Elemental Fluorine

ACIDS

Fluoboric Acid
Fluosulfonic Acid
Hydrofluoric Acid, Anhyd.
Hydrofluoric Acid, Anhyd. High Purity
Hydrofluoric Acid, Aqueous Tech.
Hydrofluoric Acid, Aqueous, Purif. & Reag.

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Potassium Bifluoride
Sodium Bifluoride

ALKALI FLUOBORATES

Ammonium Fluoborate
Potassium Fluoborate
Sodium Fluoborate

ALKALI FLUORIDES

Ammonium Fluoride
Potassium Fluoride, Cryst. & Anhyd.
Sodium Fluoride, Tech.
Sodium Fluoride, Reagent

DOUBLE FLUORIDES

Chromium Potassium Fluoride
Potassium Ferric Fluoride
Potassium Titanium Fluoride
Potassium Zirconium Fluoride
Sodium Zirconium Fluoride
Sodium Silico Fluoride
Potassium Aluminum Fluoride

METAL FLUORIDES

Aluminum Fluoride
Aluminum Fluoride, Crystal
Antimony Trifluoride
Antimony Pentafluoride
Barium Fluoride
Cadmium Fluoride
Calcium Fluoride
Chromium Trifluoride
Cupric Fluoride
Ferric Fluoride
Lead Tetrafluoride
Magnesium Fluoride (Not Optical Grade)
Mercuric Fluoride
Manganese Trifluoride
Molybdenum Hexafluoride
Nickelous Fluoride
Selenium Hexafluoride
Silver Difluoride
Strontium Fluoride
Titanium Tetrafluoride
Tellurium Hexafluoride
Tungsten Hexafluoride
Zinc Fluoride
Zirconium Tetrafluoride

NON-METALLIC FLUORIDES

Boron Fluoride Gas
Boron Fluoride Ether (Diethyl) Complex

Boron Fluoride Phenol Complex
Boron Fluoride Ammonia Complex
Boron Fluoride Diacetic Acid Complex
Boron Fluoride Di-n-Butyl Ether Complex
Boron Fluoride Dihydrate
Boron Fluoride Piperidine Complex
Boron Fluoride Ethyl "Cellosolve" Complex
Boron Fluoride Hexamethylene-tetramine Complex
Boron Fluoride Monoacetic Acid Complex
Boron Fluoride Para-cresol Complex
Boron Fluoride Triethanolamine Complex
Boron Fluoride Urea Complex
Sulfur Hexafluoride

METAL FLUOBORATE SOLUTIONS

Cadmium Fluoborate
Chromium Fluoborate
Cobalt Fluoborate
Copper Fluoborate
Ferrous (Iron) Fluoborate
Indium Fluoborate
Lead Fluoborate
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Stannous (Tin) Fluoborate
Zinc Fluoborate

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Trichloromonofluoromethane CCl_3F
Dichlorodifluoromethane CCl_2F_2
Monochlorodifluoromethane CHClF_2
Trifluoromethane (Fluoroform) CHF_3
Monochlorotrifluoromethane CClF_3

Fluoroethanes

Difluoroethane (Ethylidene fluoride) $\text{CH}_3 \cdot \text{CHF}_2$
Difluoromonochloroethane $\text{CH}_3 \cdot \text{CClF}_2$
Tetrachlorodifluoroethane $\text{CCl}_3 \cdot \text{CClF}_2$
Monochlorotrifluoroethane $\text{CH}_2\text{Cl} \cdot \text{CF}_3$
Trichlorotrifluoroethanes $\text{CCl}_2\text{F} \cdot \text{CClF}_2$
 $\text{CCl}_3 \cdot \text{CF}_3$
 $\text{CClF}_2 \cdot \text{CClF}_2$
 $\text{CCl}_2\text{F} \cdot \text{CF}_3$
 $\text{CClF}_2 \cdot \text{CF}_3$

Dichlorotetrafluoroethanes

Monochloropentafluoroethane

Fluoroethylenes

Difluoroethylene (Vinylidene fluoride) $\text{CH}_2 = \text{CF}_2$
Dichlorodifluoroethylene $\text{CCl}_2 = \text{CF}_2$
Trifluorochloroethylene $\text{CClF} = \text{CF}_2$
Monochlorodifluoroethylene $\text{CHCl} = \text{CF}_2$

Fluorobromoethanes

Dibromodifluoroethane $\text{CH}_2\text{Br} \cdot \text{CBrF}_2$

Fluorinated Acetic Acids and Anhydrides

Dichloromonofluoroacetic acid CCl_2FCOOH and $(\text{CCl}_2\text{FCO})_2\text{O}$
and anhydride
Monochlorodifluoroacetic acid CClF_2COOH and $(\text{CClF}_2\text{CO})_2\text{O}$
and anhydride

Fluorinated Acetones

Tetrachlorodifluoroacetone $\text{CCl}_2\text{F} \cdot \text{CO} \cdot \text{CCl}_2\text{F}$
Trichlorotrifluoroacetone $\text{CCl}_2\text{F} \cdot \text{CO} \cdot \text{CClF}_2$
Dichlorotetrafluoroacetone $\text{CClF}_2 \cdot \text{CO} \cdot \text{CClF}_2$

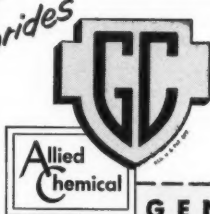
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Sightseeing transportation furnished by fork trucks

When Vapor Heating Corp. of Chicago showed its new plant to visitors the last week in May, electric-powered fork lift trucks did double duty as sightseeing buses. Vapor maintenance men fixed a special wood platform and office chairs each on a fleet of twelve trucks. Railroad signs and bells were prominent because many of Vapor's customers are railroads (for whom they manufacture steam generators and train heating systems). Platforms and chairs were removed quickly after the show. Trucks went back to hauling inanimate objects, chairs back into the office, and platforms into storage to await another "open house".

Sticking bulbs

Chemical fumes or salt spray often make aluminum-base light bulbs stick in their sockets. Under these circumstances, removal of the bulb without breakage is often impossible. Coating threads of bulbs with Aquadag, colloidal graphite dispersion in water, prevents this sticking so bulbs can be easily removed. This product is made by Acheson Colloids Co., Dept. CP, Port Huron, Mich.

Largest fluid cat cracker goes on stream

In May, the world's largest fluid catalytic cracking plant went on stream at the Girard Point (Philadelphia) refinery of Gulf Oil Corp. The huge unit, built for a throughput of at least 63,000 bbl of fresh feed daily, was designed and erected by The M. W. Kellogg Co., a subsidiary of Pullman, Inc. Cracker is a "side-by-side" unit. Dimensions of the three main vessels are: regenerator, 56' diam x 110' high; reactor, 30'8" x 71'; fractionator tower, 28' x 110'.

When inquiring check CP 1470 on handy form, pgs. 2-3

chemical processing

(CHEMICAL PROCESSING PREVIEW)

For MEN WHO MANAGE

Vol. 17 August, 1954 No. 8

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The Fabric that's made without looms

THIS IS HOW nonwoven fabric is made. The fibers are saturated and bonded
by CHEMIGUM LATEX plus other materials. The result is a fabric that is unusually soft and flexible with
uniform strength in every direction. Photo courtesy of Wellington Sears Co., selling subsidiary of West Point Mfg. Co.



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Over
the editor's
shoulder

Spade-work for ideas

Finding out about new ideas and developments entails much industrial contact and correspondence. Not all these ideas qualify for editorial treatment, but each plant call teaches the editor something . . . even if it's only where else to look for what he needs.

Early in June we went to the Sixth National Plastics Exposition in Cleveland. At a press conference during the "show," we were told how General Electric uses a radioactive steel sprue bushing to measure injection mold erosion by various plastics (page 44). The low-erosion phenolic compound they developed using this test method is described on page 27.

At the Plant Maintenance Show early this year, we uncovered a lead for an article on the use of snap-in-place glass fiber pipe insulation. Going deeper, we developed the installation story you'll find on page 144. It tells how Texas City Chemical Company lowered heat losses when it used the easily-installed insulation.

These are examples of what "turns up" with editorial digging. You'll hear more about this in future issues.

Frank E. McElroy

ASSISTANT EDITOR

THIS MONTH'S COVER

Pictured on the cover this month is Elmer F. Shelberg, manager of the Micro-analytic Department of Abbott Laboratories, working with the analysis-time-saving microfurnace he was instrumental in developing. For the complete story see page 54.

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NEW SOLUTIONS OF PROCESSING PROBLEMS

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Continuous rapping system eliminates stack dust losses	114
Products dry faster in double-cone design vacuum dryer	119

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Combating combustible dust with dry chemicals	126
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Container handles 1000 pounds, replaces five drums	136
Packs hygroscopic powder at rates to 70 per minute	138

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Less labor and heat loss with glass fiber pipe insulation	144
Up to \$10,000 per year saved with use of lithium-base grease	158

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3. If you want to subscribe to this magazine, see reader-qualification form opposite page 3

what you can expect in next month's issue . . .

Here's a quick preview of features
you'll find in September's Chemical Processing



Pioneer of Progress features platforming

David William Harris, pictured at left, is President of the Universal Oil Products Company of Chicago, whose research and development of an economical method of reforming low grade gasoline rates a place in our Pioneer of Progress series. Harris and his research staff, headed by Dr. Vladimir Haensel, conceived and perfected platforming — platinum reforming of low-grade gasoline to higher octanes and the production of aromatics.

Assistant Editor Richard Callahan worked closely with Harris and his staff in preparing the account of this development, which highlights the September issue.

Kodak recovers \$3½ million a year . . . from scrap film

Processing waste film (some of it is going into vessel in picture at right) is a complicated 10-step job. And it was slow and laborious, too, for Eastman Kodak Company of Rochester, N. Y. . . until they found a machine to handle all ten steps. Four 6000-gal capacity high-speed "dissolvers", have cut process time from 48 to 1½ hours, now yield four million ounces a year of silver (worth \$3½ million). Story of the improved operation heads up the New Solutions section for next month.



Liquid ammonia by Casale at Penn Salt

Pennsylvania Salt Company, using the first Casale ammonia installation in the US, is making liquid ammonia at the rate of 55 tons/day. Assistant Editor Ted Meinhold obtained the story on a trip to Penn Salt's Wyandotte, Mich., plant. For details of the process, see the section on Ideas next month.

Scores of other articles will highlight developments in Materials, Instrumentation, Safety — and all of the regular sections in CP.

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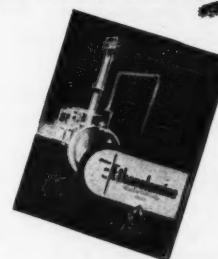
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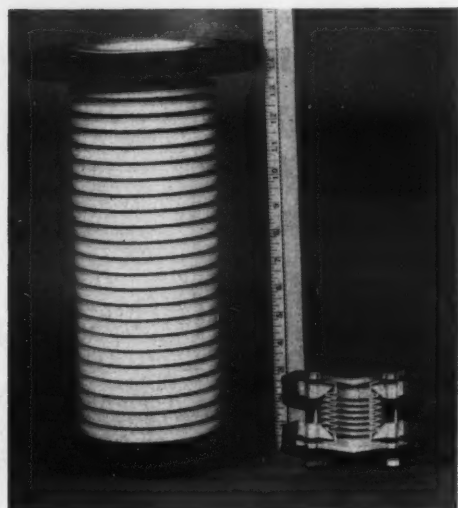


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Ethylene Glycol
Ethylene Dichloride
Diethylene Glycol
Monoethanolamine
Diethanolamine
Triethanolamine
Nonyl Phenol
Morpholine
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Polyethylene Glycols
Glycol Ethers

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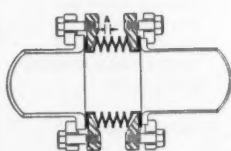


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ALBERT F. SPERRY

President and Director
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After graduating from Rensselaer Polytechnic Institute, Mr. Sperry joined the research department of Republic Flow Meter Co. in 1923, where he became vice president in charge of engineering and research. In 1937, he organized Hubbard Engineering Co., but returned to the field of instrumentation during the war as an expert for various Government agencies. After the war, he organized Panellit, Inc.

Mr. Sperry is an active member of the Instrument Society of America (having served as its first president), American Society of Mechanical

Engineers, American Institute of Electrical Engineers and the American Association for the Advancement of Science. He holds over fifty patents in the instrument and control field, and has authored many technical papers on these subjects.

In December 1952, he received the Award of the Industrial Instruments and Regulators Division of the ASME with the citation: "for the elements which he added to the mathematical structure of process control; for his aids to operation of complex systems . . ."

"automation" — how new is it?

Automation has been proclaimed by some as the "second industrial revolution." Our technocrats and pessimists have labeled it the "debaser" of labor. Theoretically, it could justify either label, but as a practical matter, neither one fits.

Actually, automation is merely a new word coined to describe more concisely the application of automatic control techniques to industrial machines and factories. The basic principles of feedback, of the "closed loop" control system, date back to the first steam engine and water wheel governors. Under one name or another, they have been understood and described in literature for the last thirty years. Process industries have not only understood, but also for many years have accepted "automation" quite completely for mechanization of their plants. They have been rewarded with tremendous improvement in productivity and product control.

Why then is there all the fuss about something so well established in our technology? Are we possibly on the threshold of some new form of industrial robotization, with automatic plants and manless machines? The answer for the chemical and process industries seems to be — no. The reason is in the nature of the chemical field itself.

Research is the key to the future of this remarkable industry. In the development of new products, materials, and technologies, the more obvious avenues of approach have been thoroughly explored. New techniques seem destined to become more and more difficult and complicated.

When we try to make these new processes completely automatic, we find several serious stumbling blocks. First of all, the problem of measurement is far from solved. Another serious limitation on automatic operation is materials of construction and their susceptibility to destruction by corrosion, high temperature, radiation, etc. Constant watch over most processes would be required even if the equipment were complete with automatic controls.

It is true that given sufficient time we could solve these problems of measurement and corrosion. However, time is a luxury that the chemical industry cannot afford. No sooner is one process operating satisfactorily than new developments impose more taxing demands on the equipment.

There comes a point of diminishing return, therefore, when the savings possible with further automation are outweighed by the added cost of equipment and the cost of making changes. The more

When inquiring check CP 1473 on handy form, pgs. 2-3

complex the product and the more volatile the market, the sooner this point will be reached.

The petroleum industry reached this point of diminishing return shortly before World War II. It was reached shortly after the war by the general chemical industry. Actually, very little change in the extent or character of automatic control has been evident in the last five or ten years. Most of the new plants use the same basic control techniques and control devices that were available ten years ago. There has been a great deal of development effort in the field of end product and quality control. However, these devices still require considerable attendance and might better be classified as semi-automatic rather than automatic.

During these post-war years, processes have grown larger and more complex and control requirements more and more exacting. Since automatic control could not handle the job 100%, it was necessary to "close the loop" through the operator.

Remote Transmission, the Central Control Room, and Alarm and Safety Systems made it practical for one operator to watch over more equipment without strain. Miniature Instruments made it possible to put more information in front of one operator, sometimes more than he could intelligently supervise. The Graphic Panelboard was developed to bring the information in focus again. These boards, employing visual aid techniques, have made it so simple for the operator to control very complex processes that many of the advantages of further automation have been eliminated.

What, then, is the trend today — and in the foreseeable future?

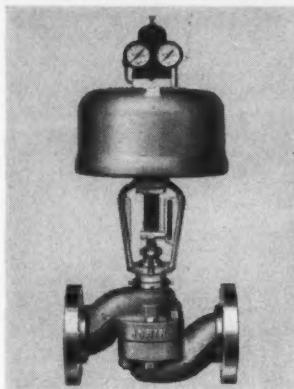
First . . . individual automatic controllers will be used to an even greater extent throughout the more complex processes. However, they will serve largely to prevent disturbances from upsetting the equilibrium of the process rather than for overall control.

Second . . . development of end product control through product analysis will continue. However, they will soon be more useful as part of an information system rather than as automatic controllers.

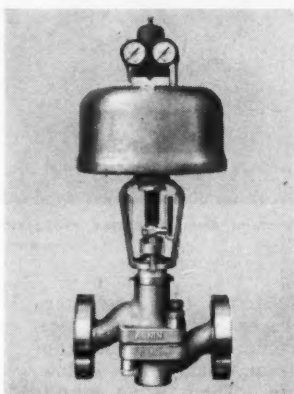
Third . . . the techniques of automation will be applied to gathering, analyzing, and presentation of information. Systems of this type are available already and have made possible supervision of literally thousands of measurements in very critical processes by one or two operators.

Fourth . . . the complete integration of the plant information system with the plant accounting and production planning systems will evolve. By feeding relevant data from the plant into proper memory computation, and read-out devices, the entire production of the plant can be subjected to analysis and operations research, so that optimization of production can become a practical reality.

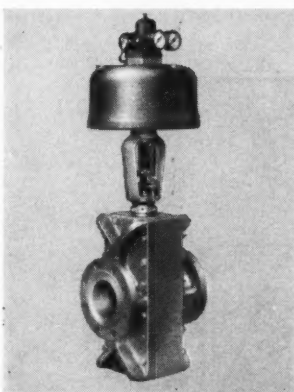
In this context, the automatization of information handling seems to hold the greatest promise toward meeting the demands of our dynamic and ever-expanding economy. It is both interesting and gratifying that in our competitive system of free enterprise, we find that tool most powerful, that emphasizes man's mastery over the machine rather than his dependence on it.



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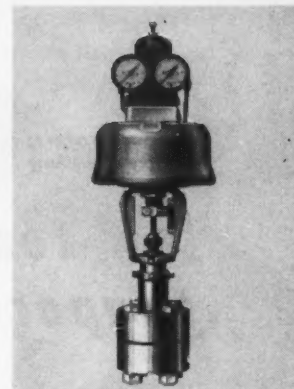
SIZES — CV .000001 to 1000

LINE SIZES — 1/2" thru 10"

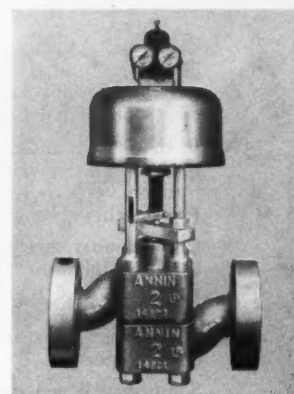
BODY RATINGS — Standard 150, 300, 400, 600, 900, 1500, 2500 PSI. Others to 50,000 PSI.

BODY DESIGN — Globe, angle and three-way. Tight shut-off, single seat body. Free-flowing design eliminates erosion. Doolseal, Bellows seal, cooling fin interchangeable with standard bonnet. Optional Teflon guide bushings and Teflon seat seal.

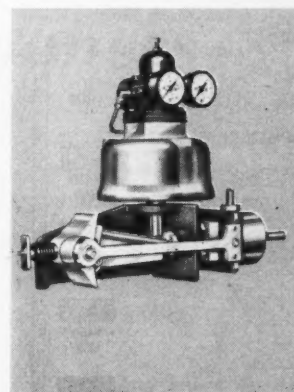
OPERATORS — Domotor, Cylinder and Hand-wheel. Precise positioning Domotor operators for all pressures and pressure drops. Stroke ranges .005 to 6 inches. Piston sizes of 25, 50, 100, 200 and 400 sq. ins. for thrusts up to 40,000 lbs.



Model 3460



Model 3560



Model 5060

ANNIN

Control VALVES

THE ANNIN COMPANY

6570 E. TELEGRAPH ROAD, LOS ANGELES 22, CALIFORNIA

When inquiring check CP 1474 on handy form, pgs. 2-3

**Armour protects insulin
quality by using . . .**

low-temperature evaporation

**Use of ammonia instead of steam as-
sures 60 degree F operating temp**

Problem: Armour and Company's pharmaceutical plant required a low-temperature method of removing alcohol and water in the evaporation operation of its insulin manufacturing process.

In the operation, an insulin-water-alcohol solution, containing 70% ethyl alcohol (used in initial extraction step), is reduced to less than 1% alcohol (by weight).

Conventional evaporators required rigid control because high film temperatures could have a detrimental effect upon the end-product. In view of the fact that insulin, a delicate protein, is produced from pancreas glands, the problem was especially important.

Solution: When the company built the \$12 million Pharmaceutical Center near Kankakee, Ill.,

last year, its engineers selected two single-stage falling-film Lo-Temp evaporators for the operation. These units used compressed ammonia vapor for heating instead of steam, which results in lower operating temperature. There is no outside source of heat. Power is required by the ammonia

compressors and circulating pumps only. The evaporators can be pictured as being an ordinary refrigerator in reverse.

The two units are operated batch-wise, one after the other, making operation two-stage. Individual batches are fed continuously to the first evaporator while a portion of the product is recycled. When total volume in first unit is sufficiently reduced, contents are transferred to smaller unit where it undergoes same procedure.

First stage has a vapor rate of 750 gph, while second stage handles 400 gph. A 240-ton ammonia compressor is on the large evaporator, and a 125-ton on the small. Operating pressure of $\frac{1}{2}$ " Hg (absolute) is obtained with a 3-stage steam ejector. Evaporators are made of 316 stainless steel with a No. 4 polish to prevent any solid particles from adhering to the sides.

Results: With the new equipment operating temperature remains below 60°F. Risk of damage to quality and potency of insulin, due to excess heat, has been greatly reduced.

Company has installed a third unit for experimental work. Evaporating capacity is approximately 75 gph of water, at 60°F.

(Lo-Temp evaporator is product of Mojonner Bros. Co., Dept. CP, 4601 West Ohio St., Chicago 44, Ill. . . . or for more information check CP 1475 on handy form, pages 2 and 3.)

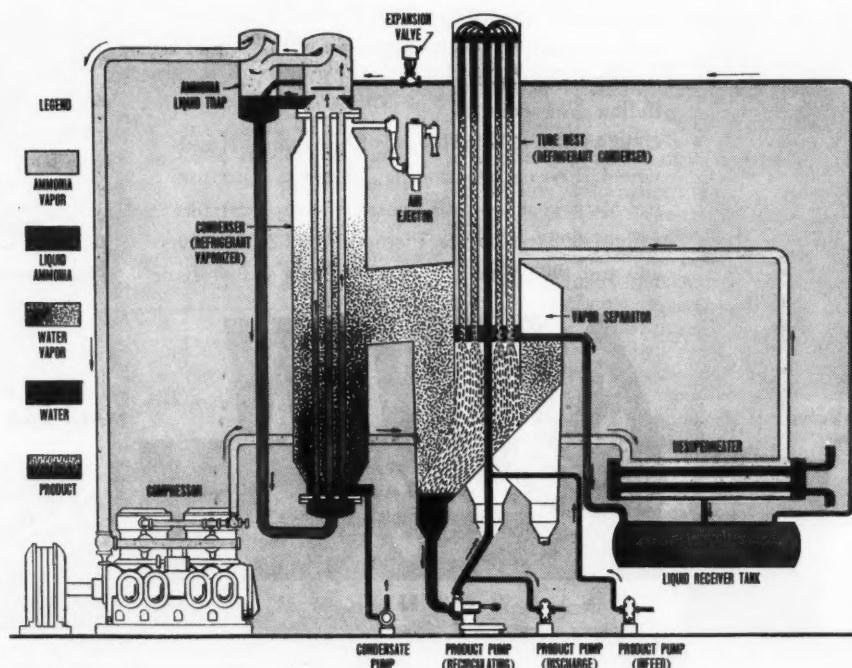
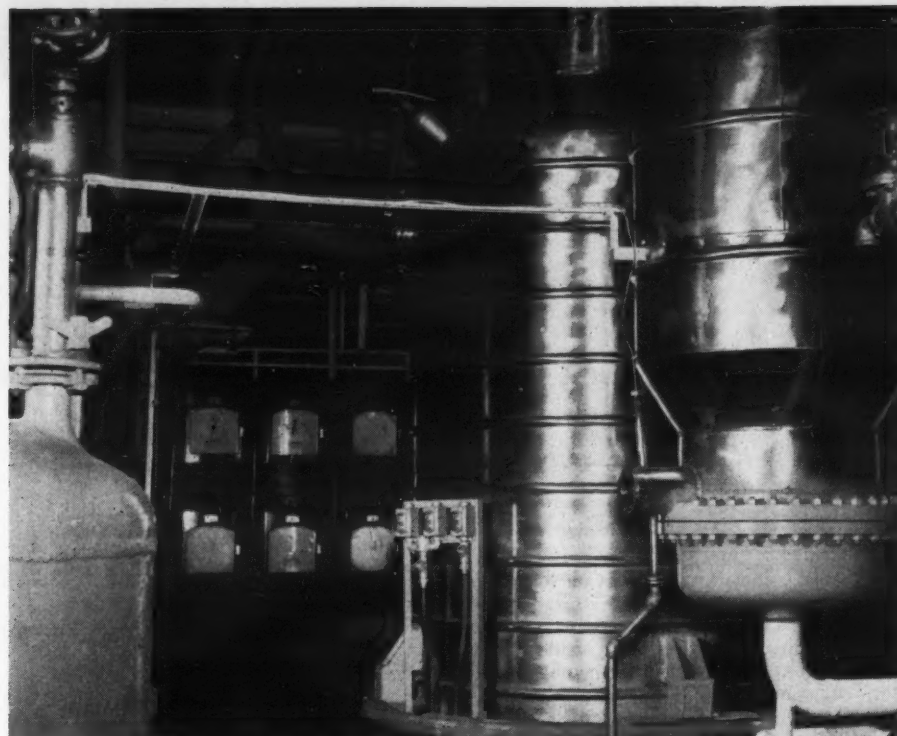


Diagram illustrating operating principle of ammonia-heated evaporator. At the Armour plant both product and condensate contain alcohol and water

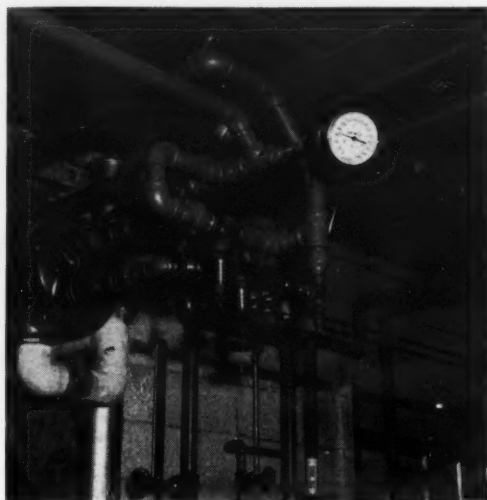


Single stage ammonia-heated evaporator used in insulin production. Vapor separator is in center, condenser at right

Constant temperature check with swivel-neck thermometer

**easy-to-read instrument seen from al-
most any spot**

Problem: Witco Chemical Company, Chicago, Illinois, was looking for a method of keeping constant check on batch reaction temperatures in the new wing of its drier plant. The company makes naphthenic, octoic, tall oil (Wital), and odorless driers for paints, varnishes, and inks.



Swivel-neck thermometer can be adjusted to any angle

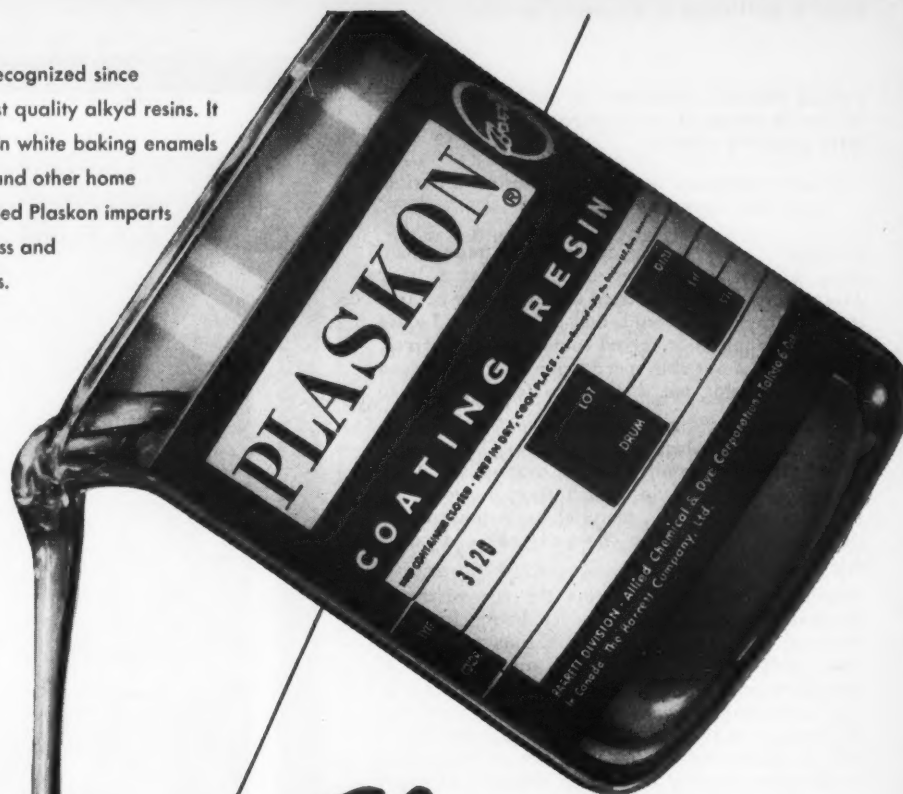
Solution: In addition to standard recording instruments, company installed 4½" diam mercury-actuated swivel-necked dial thermometers at key temperature measuring points in plant. Instruments are designed for use at straight or any angle. Easily read, the thermometers have a glass face, molded case, and metal back.

Results: Instruments can be read from almost any location in the building. Operators can keep a constant eye on reaction temperatures, if necessary. Result is savings of time and labor.

(Swivel-necked thermometers are product of Palmer Thermometers, Inc., Dept. CP, 2502 Norwood Avenue, Cincinnati 12, Ohio . . . or for more information check CP 1476 on handy form, pages 2 and 3.)

Processing and Engineering Data section be-
gins on page 184.

Plaskon 3120 has been recognized since 1947 as one of the highest quality alkyd resins. It is a preferred ingredient in white baking enamels for refrigerators, ranges, and other home appliances. Glycerine-based Plaskon imparts qualities of durability, gloss and adhesion to these enamels.



since 1947

Glycerine contributes Lasting Toughness

Good color retention, adhesion, and film toughness are of primary importance in baked coatings, interior and exterior enamels, automotive undercoats, general industrial air-drying primers, and coatings for metal furniture and equipment. Glycerine alkyds are favored as vehicles for coatings of this type.

Not only does Glycerine impart the desired properties to the resin. It also simplifies the resin-making process because it is so easy to handle. Its cooking qualities are excellent. It is easily controlled to give a product of low acid number without undue hazard of gelation.

Want detailed information on the chemical and physical properties of Glycerine? "Why Glycerine for Alkyd Resins and Ester Gums?" is yours for the asking. Write Glycerine Producers' Association, 295 Madison Avenue, New York 17, N. Y.

Nothing takes the place of Glycerine

When inquiring check CP 1477 on handy form, pgs. 2-3

Pumps viscous, corrosive syrup to fourth stage of evaporator with positive control . . .

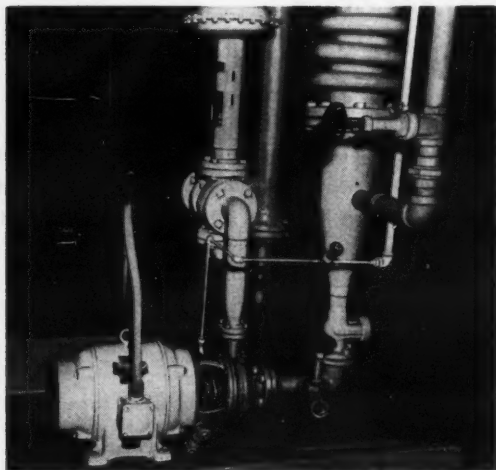
unit maintains liquid level, resists abrasion, and cuts operating costs

Problem: A positive displacement pump handling highly viscous, corrosive syrup at a large Midwestern distillery proved unsatisfactory because its flow capacities could not be varied. Liquid level in evaporator it served could not be positively controlled. A variable-speed drive, placed between pump and motor, but it did not offer a solution to the trouble.

The pump was being used between third and fourth stages of a multiple-effect evaporator. Control of liquid level in fourth stage is vital. If level becomes too low, material has a tendency to dry. It then has to be chopped out — a costly operation.

Another difficulty arose from the corrosive and abrasive effects of the product being handled. Material is a gunk containing fibrous matter and about 35% solids. These solids might consist of fine parts, such as grain, corn, and the like. Lactic acid is the main corrosive ingredient. Viscosity of the syrup is in the range of 10,000 SSU, but this is only a measure of quality. Nature of material is in the same category as ketchup, mustard, or paper pulp.

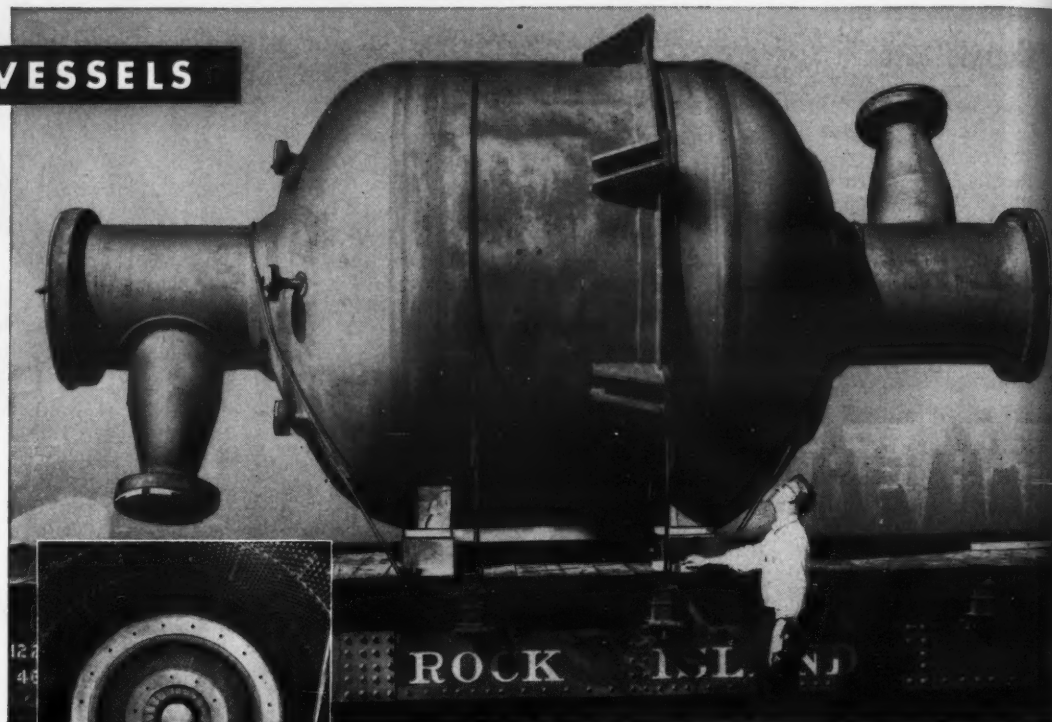
Solution: About three years ago an Ampco centrifugal pump, with a level controller, was installed. Controller actuates a diaphragm-operated control valve, which regulates flow through discharge line of pump.



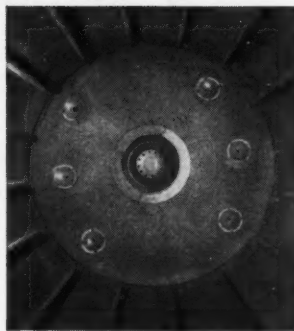
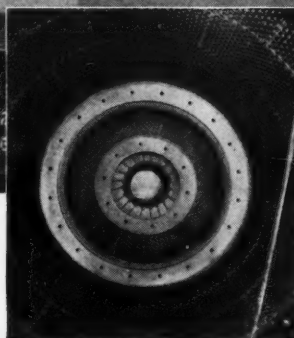
Centrifugal pump and level controller installation is shown in operation at a large distillery in the Midwest

Bearings in pump are designed for full thrust and positioned for uniform distribution of load. Construction is all aluminum bronze, including supporting members. Casing gasket is offset and protected from erosion. Blind tapping is avoided, preventing corrosion breakthrough.

VESSELS



Refractory-lined reactor ready for shipment from the Milwaukee plant. Overall length flange-face to flange-face: 21 ft. 7 in. Three of these A. O. Smith reactors, when installed, become the heart of a catalytic reforming plant.



These interior views show, at top: expanded metal liner support prior to gunning insulation. Grid platform support rings are visible. Lower picture shows shop-installed refractory lining covered by stainless steel lining designed with interlocking expansion joints.

HIGH TEMPERATURE HIGH

A. O. Smith lined and tubul

For thirty years, petroleum and chemical industries have come to us with pressure vessel and heat exchanger problems. Their reliance on the unmatched advantages we offer in manufacturing know-how and the resourcefulness of our research laboratories and technicians, design engineers and shop men has proved to be well placed. The two reactors shown here are examples of our work.

On this page is a special, refractory-lined vessel of A-212 steel, designed for 650 psi. and temperatures starting at 900° F. The walls are protected by shop-installed refractory lining. Total weight of 50 tons includes 28,000 lb. of lining, its supports

Shown here
changer shop
inch wall tub
all poly reac

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and a

On this
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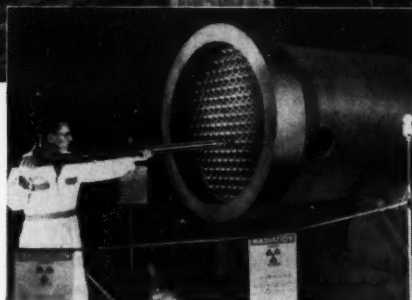
When
proble

Outstanding Advantages



EXCHANGERS

Shown here is one of twenty poly reactors going through our heat exchanger shop, undergoing tube side pressure test at 2160 psi. One-quarter inch wall tubes are welded to tube sheets and tubes rolled full depth on all poly reactors.



Radioactive cobalt being used for examination of welds during poly reactor construction. This method permits examining welds that are inaccessible to X-ray equipment.

HIGH PRESSURE tubular reactors

and a catalyst grid platform on pedestal rings.

On this page is shown a poly reactor undergoing shop tests before shipment. Throughout fabrication and long before shop work begins, materials and processes are subjected to exhaustive tests to make sure quality demands are met. Metallurgical, spectrographic and pressure tests during and at completion of construction assure conformity to specifications.

YOU ARE INVITED

Whenever you have a pressure vessel or exchanger problem, write our Milwaukee office for information

For glass-lined process equipment, contact GLASCOTE PRODUCTS, INC., Cleveland 17, Ohio—A new A. O. Smith Subsidiary

about the outstanding advantages which A. O. Smith research, engineering and construction offer.

Through research  ... a better way

A.O. Smith
CORPORATION

Process Equipment Division
International Division: Milwaukee 1
MILWAUKEE • HOUSTON • LOS ANGELES

NEW SOLUTIONS of processing problems

Results: Liquid level is properly maintained in fourth stage of evaporator, by means of pump and level control. Corrosion and abrasion are no longer problems. Aluminum bronze alloys withstand the action of lactic acid and abrasive solids quite satisfactorily.

Pump is driven by a 7½ hp motor, compared with a 25 hp motor necessitated by former unit. It operates continuously at a temperature of about 140° F. However, power costs have been cut, as have maintenance costs, since shutdowns for cleaning are minimized. Space requirements for this pumping unit are much less and all parts are readily accessible for servicing in case of operational breakdown.

(Centrifugal pump is a product of Ampco Metal, Incorporated, Department CP, 1745 S. 38th Street, Milwaukee 46, Wisconsin . . . or for more information concerning the manufacturer's product, reader may simply check CP 1479 on the convenient Reader Service slip which is located between pages two and three.)

Are you wondering why many of these editorial articles give . . .

Manufacturer's Name and Address . . . ?

You doubtless have noted names and addresses of manufacturers at the end of many editorial articles in CHEMICAL PROCESSING. Have you wondered, "Is this some sort of advertising?"

No, that "source" is there because the editors know that often you want more information, quickly and easily. Of course, such articles are purely editorial material which has been selected by the editors as being worthy of your attention . . . (it is **not** carried with any responsibility to the manufacturer nor does it obligate the manufacturer). This is strictly a service for you . . . the reader.

We know that many readers often want more than just the pertinent description and facts . . . so we tell you where and how you can obtain complete details, either by writing direct or using the handy Reader Service slip between pages two and three.

This is one of our extra Reader Services, pioneered in this field by CHEMICAL PROCESSING in 1938.

THE EDITORS

When inquiring check CP 1478 on handy form, pgs. 2-3

AIR POLLUTION



Industry Must Keep Abreast Of Atmospheric Conditions

If you'd like to know how to check weather over your plant . . . day in and day out . . . chances are our experience can help you.

Bendix-Friez offers you all in one package, your own weather station for your own exact location. (The height of your stack, terrain, etc., make a big difference!)

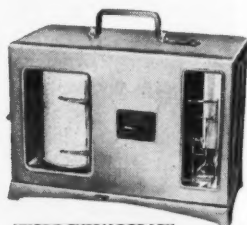
Accurate, meteorological Bendix-Friez instruments tell you the temperature, humidity, windspeed and direction, precisely.

Seventy-seven years of continuous manufacture of precision instruments stands behind your challenge to air pollution.

Offered to you too, is all of Bendix-Friez experience with others that could guide you to the solution of your air pollution problem. Write today.



AEROVANE Indicates and records wind speed and direction. Recognized as "best all-purpose wind measuring instrument yet devised." Readily installed and easily maintained.



HYGRO-THERMOGRAPH The leader in its field. Noted for precise accuracy and long-time dependability. Portable, easy to operate. Widely used in laboratories, factories and offices.

FRIEZ INSTRUMENT
Division of

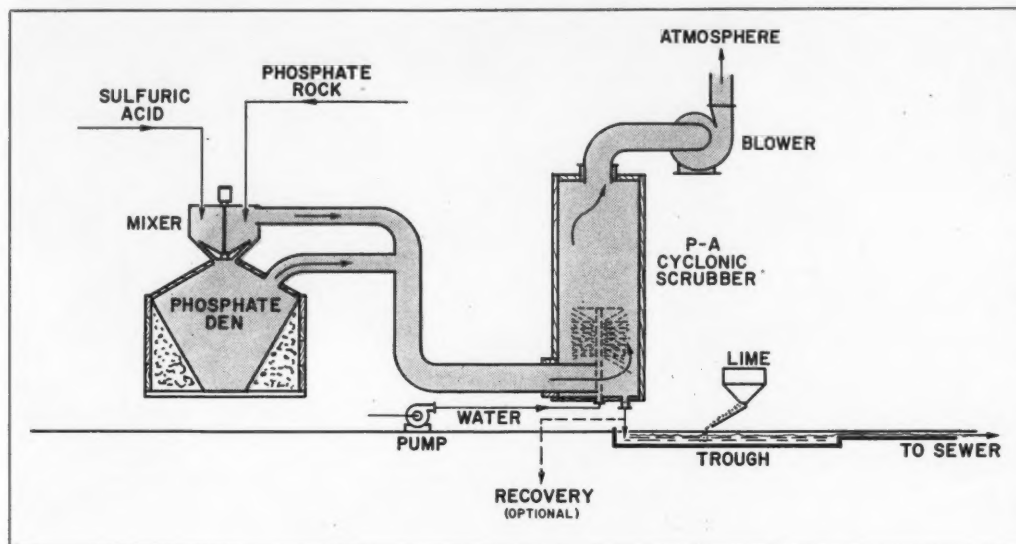
1450 Taylor Ave., Balto. 4, Md.
EXPORT SALES
Bendix International Division
205 E. 42nd St., New York 17, N.Y. U.S.A.

When inquiring check CP 1480 on handy form, pgs. 2-3

**new solutions
of processing problems**

Fertilizer plant fumes pass through simple wet scrubber that —

removes 98% of fluorine gases



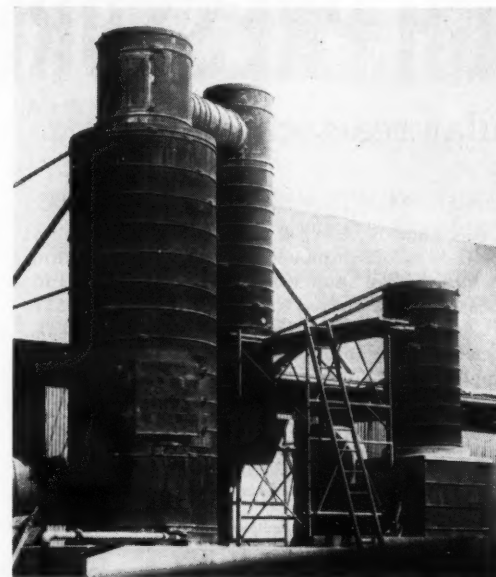
Flow diagram shows how scrubber is used to remove fluorine gases from exhaust fumes at fertilizer plant

**Fumes at 100 to 130°F are scrubbed
at rate of 8200 cfm with 80 gpm
of 150-psi water**

Problem: The Smith Agricultural Chemical Company (SACCO), Columbus, Ohio, had to prevent escape of a by-product fluorine gas, evolved in its manufacturing process. Concentration of the gas was such that it was injurious both to health and to vegetation. Company tried a spray-box scrubber but it was not entirely effective.

Company produces superphosphate fertilizers. Crushed phosphate rock, consisting principally of tricalcium phosphate (with 6 to 8% calcium fluoride), is its starting material. This is acidulated with sulfuric acid to convert the tri to mono-calcium phosphate, which is a water-soluble product. It is during acidulation that hydrogen fluoride gas evolves and combines with silicon dioxide to form the hazardous fluorine exhaust gases (SiF_4).

Solution: After extensive experimentation, company installed a Pease-Anthony Cyclonic Scrubber to clean combined gases from acidulation vessel and superphosphate den area.



View of scrubber installation at SACCO superphosphate fertilizer plant, Columbus, Ohio

Gas enters tangentially at bottom of unit and pursues a spiral path upwards. Water spray at rate of 80 gpm (from plant condensers) is introduced into rotating gas from an axially-located manifold in lower part of scrubber. Fine spray droplets are caught in gas stream and, by centrifugal force, are swept across to wall of cylinder, colliding with and collecting precipitated silica and hydrofluosilicic acid enroute. Effluent water runs down the walls and out the bottom of unit.

Fluorine exhaust gases (averaging 384 mg fluorine per standard cu ft), at rate of 8200 cfm and temperature of 100 to 130°F, are pulled through scrubber by a V-belt-driven fan. Acid in effluent is neutralized with lime from a simple vibratory feed hopper. Solids settle in trough, allowing clear effluent to flow to sewer or to be recirculated.

Results: Gas discharge is reduced to 8.2 mg of fluorine per standard cu ft — or a removal efficiency of 98%. Working area and den proper are free from fumes and gas. Effluent water, prior to treatment, has certain economic value in the manufacture of sodium, potassium or ammonium silico fluoride, which may be developed later.

Scrubber's simple, trouble-free construction and full utilization of corrosion-resistant materials have kept maintenance at a minimum.

(Pease-Anthony Cyclonic Scrubber is product of Chemical Construction Corporation, a unit of American Cyanamid Company, Dept. CP, 488 Madison Avenue, New York 22, N. Y. . . . or for more information check CP 1481 on handy form, pages 2 and 3.)

**Detergent kept salt-free
by phenolic lining
in 55-gal drums . . .**

Ninol Laboratories assure product protection in shipment and storage

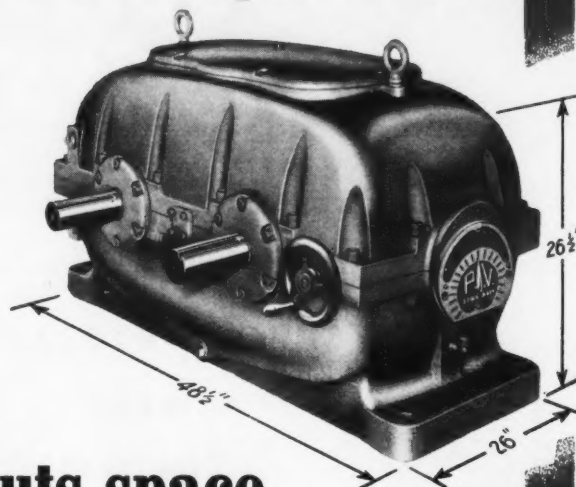
Problem: Practical, safe packaging for its recently developed salt-free sulfonated detergents was sought by Ninol Laboratories of Chicago. Glass was ideal, but impractical economically. Steel drums were the most practical carrier. However, if shipped in an unlined container, the detergent would react with the steel and produce iron salts — defeating the exclusive feature of the product.

Solution: A protective lining for the steel drums was the only answer. After a period of experimentation, Ninol chose a high-baked phenolic lining called IC-25.

Results: Protection offered by lining is excellent. Ninex detergents reach customers in original salt-free state in specially-lined 55-gal drums.

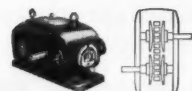
(Baked phenolic lining and drums are products of Inland Steel Container Co., div of Inland Steel Co., Dept. CP, 6532 S. Menard Ave., Chicago 38, Ill. . . . or for more information check CP 1482 on handy form, pages 2 and 3.)

LINK-BELT 25-hp P.I.V. Variable Speed Drive

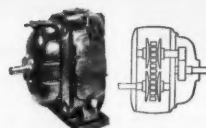


**cuts space
requirements up to
50%**

4 OF 16 P.I.V. TYPES
HORIZONTAL OR VERTICAL MOUNTINGS
1/2 TO 25 HP—
RATIOS TO 6:1



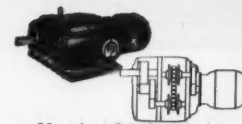
Basic, Positive, Infinitely Variable (P.I.V.) Speed Drive.



P.I.V. with single reduction input or output helical gears.



Motorized P.I.V. with single reduction input and output helical gears.



Motorized P.I.V. with single reduction input and double reduction output helical gears.

**LINK-BELT gives you all
the advantages of positive,
stepless speed changing
in high horsepowers, too**

ONE of the great advantages of P.I.V.'s positive, all-metal drive is dramatically illustrated by the Size 6. Compared to other speed changers in this hp range, it saves 70 cu. ft. of space!

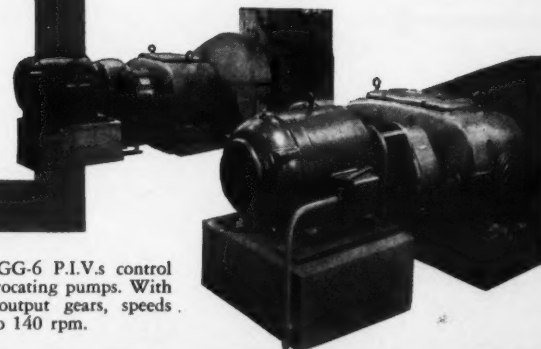
In addition, infinitely stepless regulation means you can select the exact speed you want—from maximum to minimum. Unaffected by temperature and atmospheric conditions, all moving parts are totally enclosed and splash-lubricated.

The Size 6 P.I.V. is built in three types: The basic drive . . . with input or output gears . . . with input and output gears. All are available in a wide range of ratios, 20 to 25 hp.

Get the facts on the Size 6 from your nearest Link-Belt office or distributor. You'll receive a copy of Folder 2374. And for information on the complete P.I.V. line, ask for Book 2274.

LINK-BELT
P.I.V. VARIABLE SPEED DRIVE
13,594

LINK-BELT COMPANY: Executive Offices, 307 N. Michigan Ave., Chicago 1. To Serve Industry There Are Link-Belt Plants, Sales Offices, Stock Carrying Factory Branch Stores and Distributors in All Principal Cities. Export Office, New York 7; Canada, Scarborough (Toronto 13); Australia, Marrickville, N.S.W.; South Africa, Springs. Representatives Throughout the World.



Two Link-Belt HGG-6 P.I.V.s control the speed of reciprocating pumps. With both input and output gears, speeds range from 46.5 to 140 rpm.

When inquiring check CP 1483 on handy form, pgs. 2-3

12 PRODUCTIVE REASONS *why*

SHARPLES SUPER-D-HYDRATORS mean low cost PRODUCTION of DRY CRYSTALS

This battery of twelve C-27 Super-D-Hydrators installed in one of the world's most modern caustic plants, is handling the difficult job of separating sodium chloride from caustic liquor. High efficiency rinsing and drying are primary requisites in this operation.

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When inquiring check CP 1484 on handy form, pgs. 2-3

NEW SOLUTIONS of processing problems

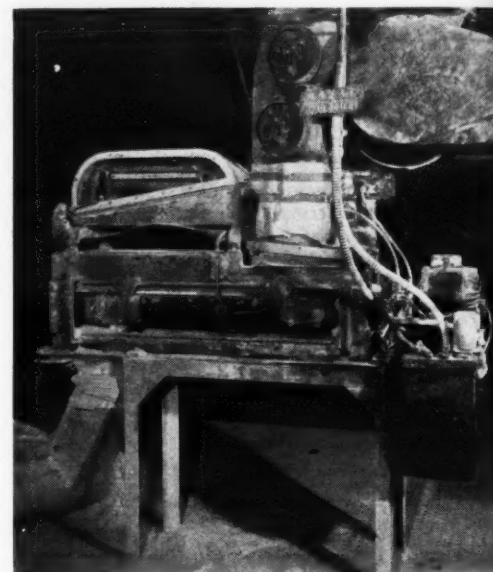
Accuracy of scale feeders unaffected by dampness of fluorspar . . .

compact units handle material for use in hydrofluoric acid process

Problem: Former scales used for feeding fluorspar at the East St. Louis plant of Aluminum Co. of America were not sufficiently accurate. Previous units also required excessive maintenance and occupied a large amount of floor space.

Another disadvantage of equipment used in past was that if the fluorspar became slightly damp, scales would not operate. For instance, if a heavy rainstorm occurred, all of material had to be dried and dumped back in the bin.

Fluorspar (CaF_2) is used in company's hydrofluoric acid process. It must be added continuously to each HF still. With addition of sulfuric acid and heat, HF gas is formed. After scrubbing, gas can



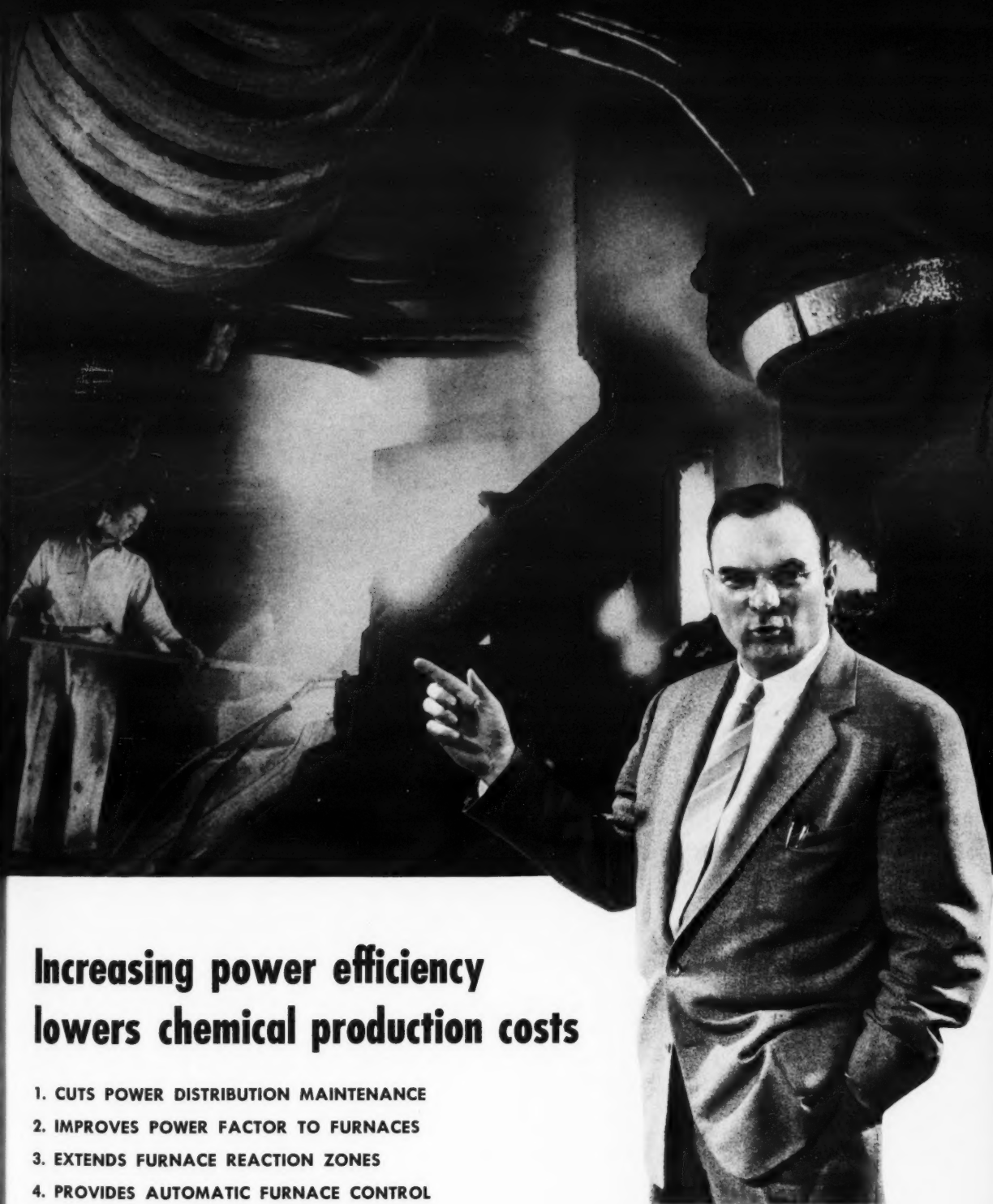
Feeder scales in operation on fluorspar have required only minimum maintenance

be condensed for commercial hydrofluoric acid. Major portion of production, however, is used to form AlF_3 or synthetic cryolite ($\text{AlF}_3 \cdot 3\text{NaF}$) for use in aluminum reduction process.

Solution: Several vertical-gate Merchon scale feeders were placed in operation at the E. St. Louis plant about four years ago.

These gravimetric feeders are the weigh-belt type in which the material is carried over a sensitive scale by a continuous, flexible belt. Deflections of the scale beam actuate mercury switches. These switches in turn energize an electric clutch controlling the position of vertical gate, which maintains a constant delivery of material by weight. One advantage of these units is the continuous second-to-second feeding. An anti-flooding device is used ahead of each feeder.

CHEMICAL PROCESSING



Increasing power efficiency lowers chemical production costs

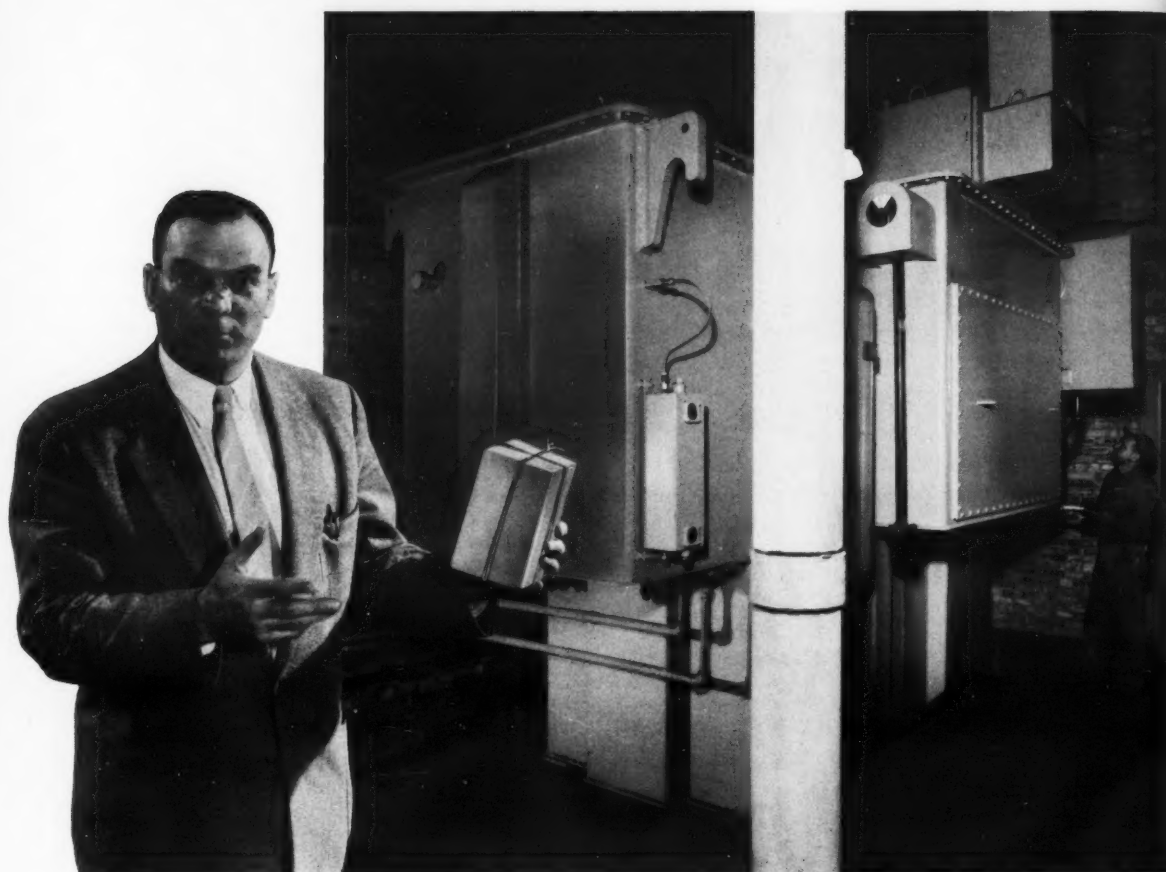
1. CUTS POWER DISTRIBUTION MAINTENANCE
2. IMPROVES POWER FACTOR TO FURNACES
3. EXTENDS FURNACE REACTION ZONES
4. PROVIDES AUTOMATIC FURNACE CONTROL
5. INCREASES POWER RECTIFICATION RELIABILITY
6. REDUCES HAZARDS OF CORROSION
7. REDUCES TOTAL POWER CONSUMPTION

On the next 7 pages, Ira Coen, Manager, Chemical Industry Sales, Westinghouse Electric Corp., shows you how the right combination of electrical equipment cuts production costs.

YOU CAN BE **SURE**...IF IT'S **Westinghouse**



Packaged installation resulted in improved power efficiency gain at this plant



Shell-type Westinghouse Furnace Transformer serving phosphorus reduction furnace. Provided high power factor, cut total power costs.

Shell transformer can be installed close to load to improve power factor

Basic producers — large, medium, or small — can bring power to unit processes more economically and use it more efficiently, for a net increase in production and reduction in power cost.

One company, in cooperation with Westinghouse Engineers, planned an electrical package from power supply to furnace that did just that.

The first important step was to bring furnace transformers as close to utilization points as possible, so that secondary leads were short. Resulting high power factor cut energy costs considerably.

The furnace is operated at high voltage close to the load, providing electrical efficiency approximately 10% higher than usual.

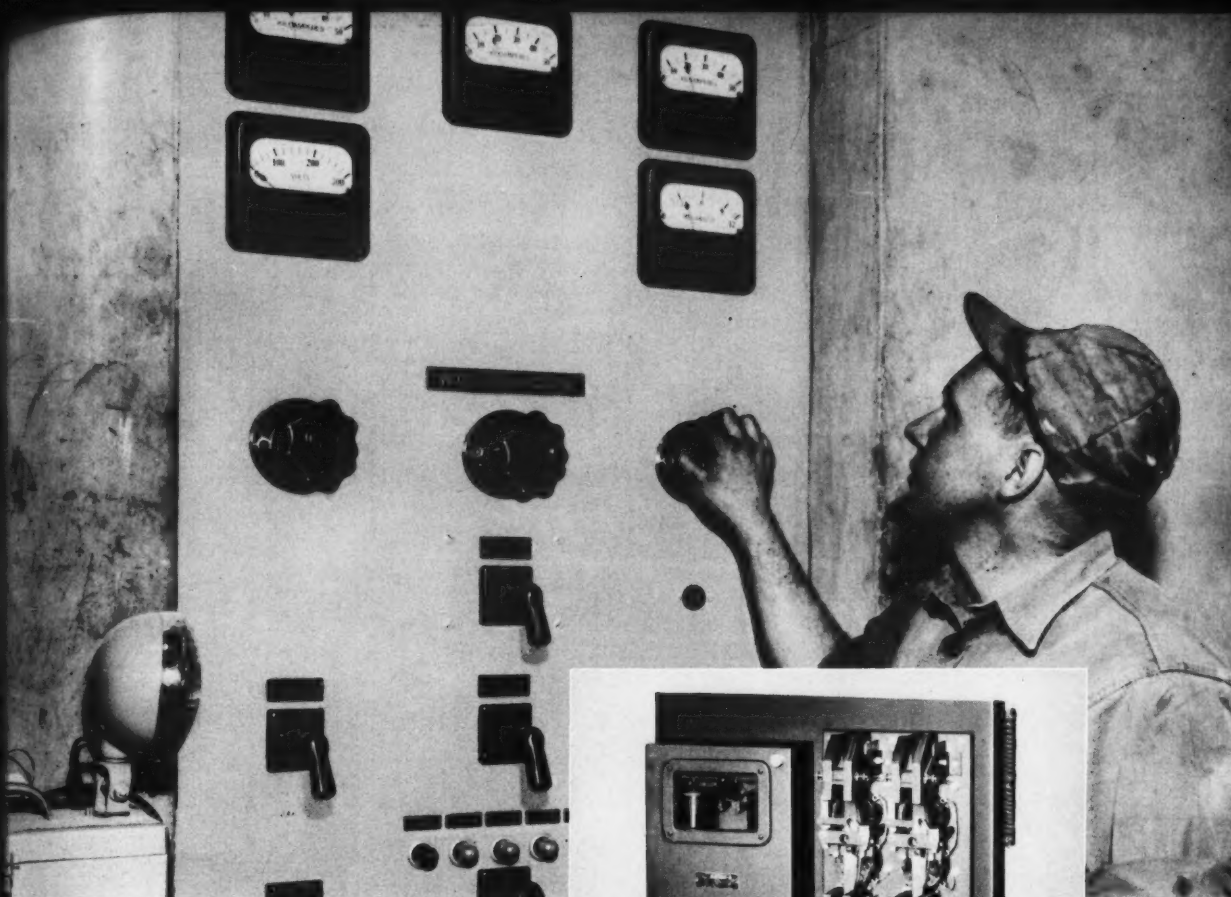
The Westinghouse Shell-type Transformer is basically a far better performer, electrically and mechanically, for applications such as this where electrical equipment must stand the terrific punishment of cyclic loading and high current surges. Westinghouse Shell Transformers are more compact, provide better cooling, are gas and moisture tight. Maintenance is lower.

Operat
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Type A
compr
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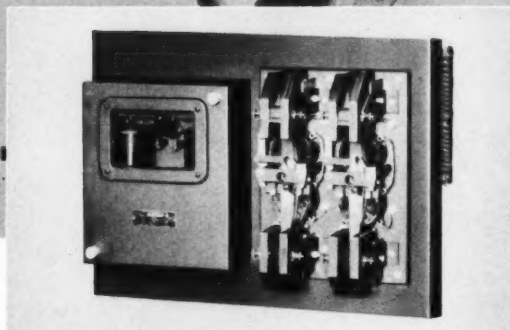
The s
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Operator's panel for arc furnace—current settings are made here.

Type AU Regulator assembly for one electrode; each is comprised of AU Regulator electrode element and reversing contactor.



Westinghouse Type AU Balanced Beam Regulator provides automatic operation and accurate control of energy to furnace

The second major step in this installation was the choice of the Westinghouse AU Regulator as the furnace control system. This regulator balances arc voltage and current to maintain the desired power input set by the operator, consistently and precisely.

If furnace conditions change, position of electrodes within the charge is automatically changed to maintain the current pre-set by the furnace operator. The Type AU Balanced Beam Regulator was the first arc furnace control which measured both arc current and voltage in positioning electrodes and is the only balanced beam type now available.

The Type AU Regulator acts fast to correct cur-

rent unbalance but doesn't overshoot or hunt. The sensitivity can be adjusted to suit particular furnace conditions. Properly applied and adjusted, the Type AU regulator will maintain electrode position to insure maximum continuous protection from chemical arc furnaces. It is particularly adaptable to use with automatic power regulating systems.

Westinghouse Type AU Balanced Beam Regulator is recommended as the most suitable and economical for most chemical arc furnace applications. For the few applications where a rotating regulator is desirable, the Westinghouse Rototrol® is available.

YOU CAN BE **SURE**...IF IT'S **Westinghouse**



One man and dependable Westinghouse Ignitron Rectifiers run this chlorine line

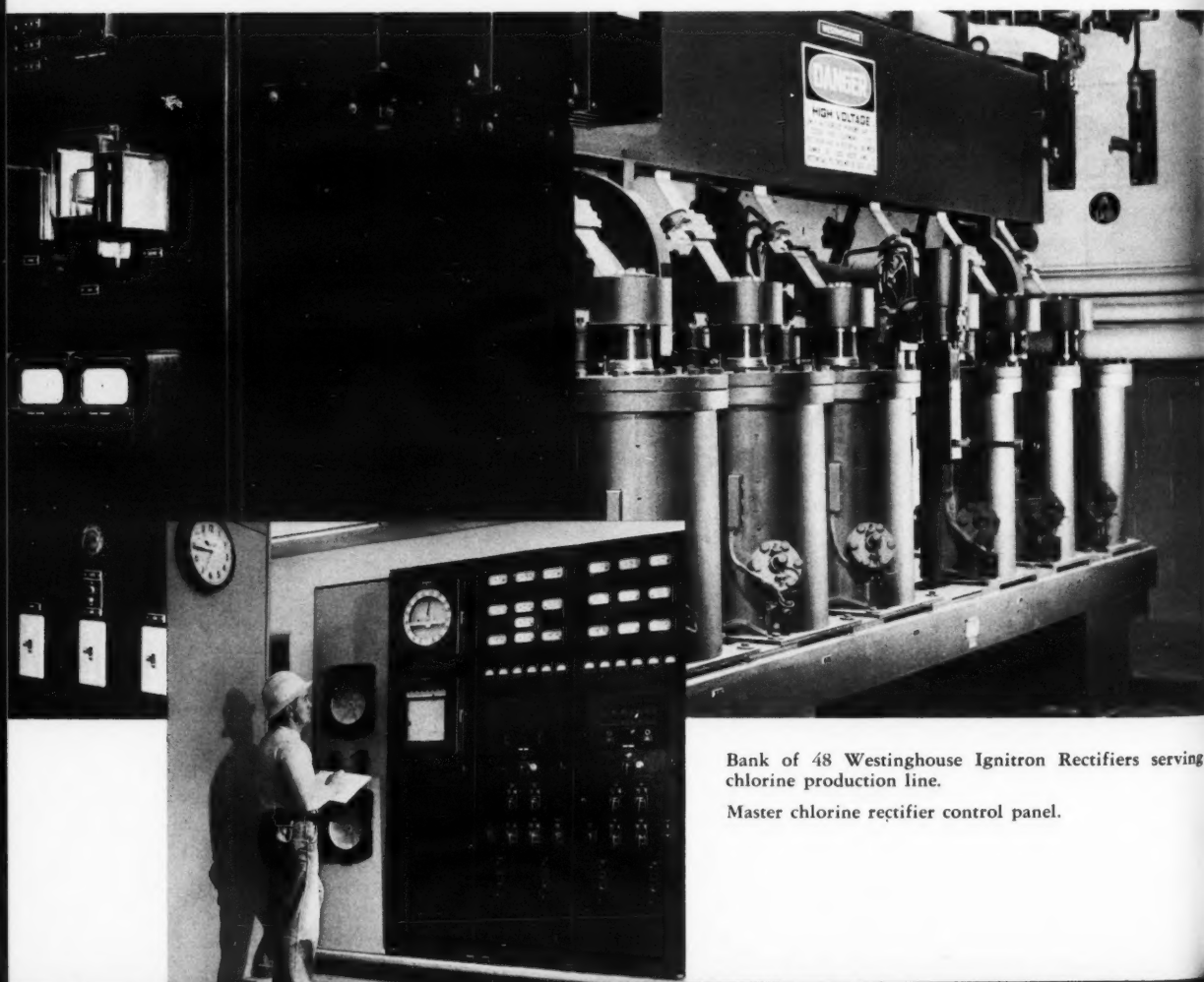
As this basic chemical producer has found, Westinghouse Ignitron Rectifiers bring a new standard of performance—high power conversion efficiency and low cost to electrolytic processes using power in the 250-3000 voltage range. The chlorine gas operation at this plant is comprised of 180 cells, connected in series, at 650 volts, and is served by a bank of 48 rectifier units.

The Ignitron Rectifier, developed by Westinghouse, introduces a basically new principle in the utilization of rectifying properties of the mercury vapor arc. At higher voltages, it is undisputably more efficient than motor-generator sets or rotary converters. Production cost savings are proportion-

ally greater as voltages increase and, of course, the ratio of electrical energy per ton of finished product increases.

Operating headaches are eliminated, too—Ignitrons can be set up easily for automatic unattended operation. Availability of 99% or better in Ignitron installations often eliminates the need for stand-by equipment. Complete absence of moving parts drastically cuts maintenance. Ignitrons are inherently easier to protect against corrosion than any comparable rectifying equipment.

Westinghouse Ignitron Rectifiers offer you an unequaled opportunity for continuous throughput at rock-bottom cost.

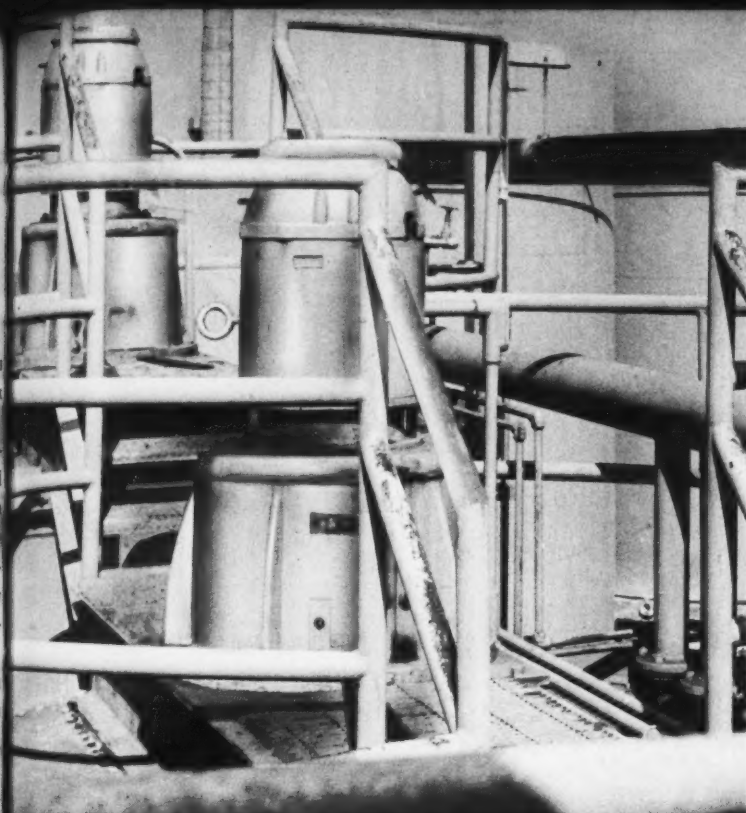


Bank of 48 Westinghouse Ignitron Rectifiers serving chlorine production line.

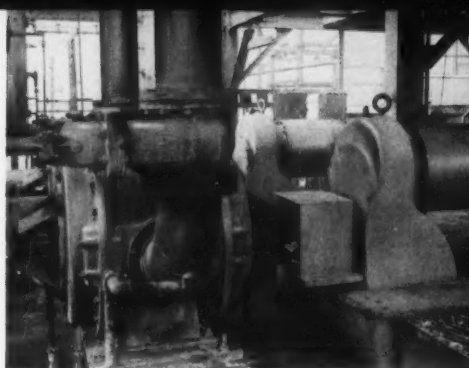
Master chlorine rectifier control panel.

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Life-Line Gearmotors, serving salt removal tanks, give automatic processing a boost with dependable, round-the-clock operation.



Life-Lines driving water recirculating pumps.



Westinghouse Control Center banks motor controls away from exposed production areas.



Gearmotors give vital 24-hour reliability driving pumps on salt removal tanks

Dependable, continuous circulation of tremendous amounts of water is critical in this plant. For the job, Westinghouse Gearmotors were chosen.

Both gear unit and motor in these compact units incorporate features that assure continuous service with a minimum of maintenance required. Accurately hobbed, specially treated gear teeth absorb heavy operating shocks and prevent damaging vibrations. Westinghouse Gearmotors have positive shaft sealing to prevent leakage of oil and entrance of foreign matter.

The Life-Line® Motor, an integral part of the gearmotor, is pre-lubricated—new 4-way seal bearings provide a continuous supply of motor grease without leakage and, above all, keep dust and dirt out.

Westinghouse Control Centers locate control conveniently for emergencies, away from danger areas

For power or light, Westinghouse Control Centers offer the modern way to group motor starters in centralized, planned-away-from-production areas. They are particularly suitable in plants where atmospheres are heavily laden with dust or chemical gases. Maintenance people can get at them quickly and easily.

Individual control cubicles can be removed or replaced in a few minutes. Each unit is safely insulated from its neighbors.

YOU CAN BE **SURE**...IF IT'S **Westinghouse**

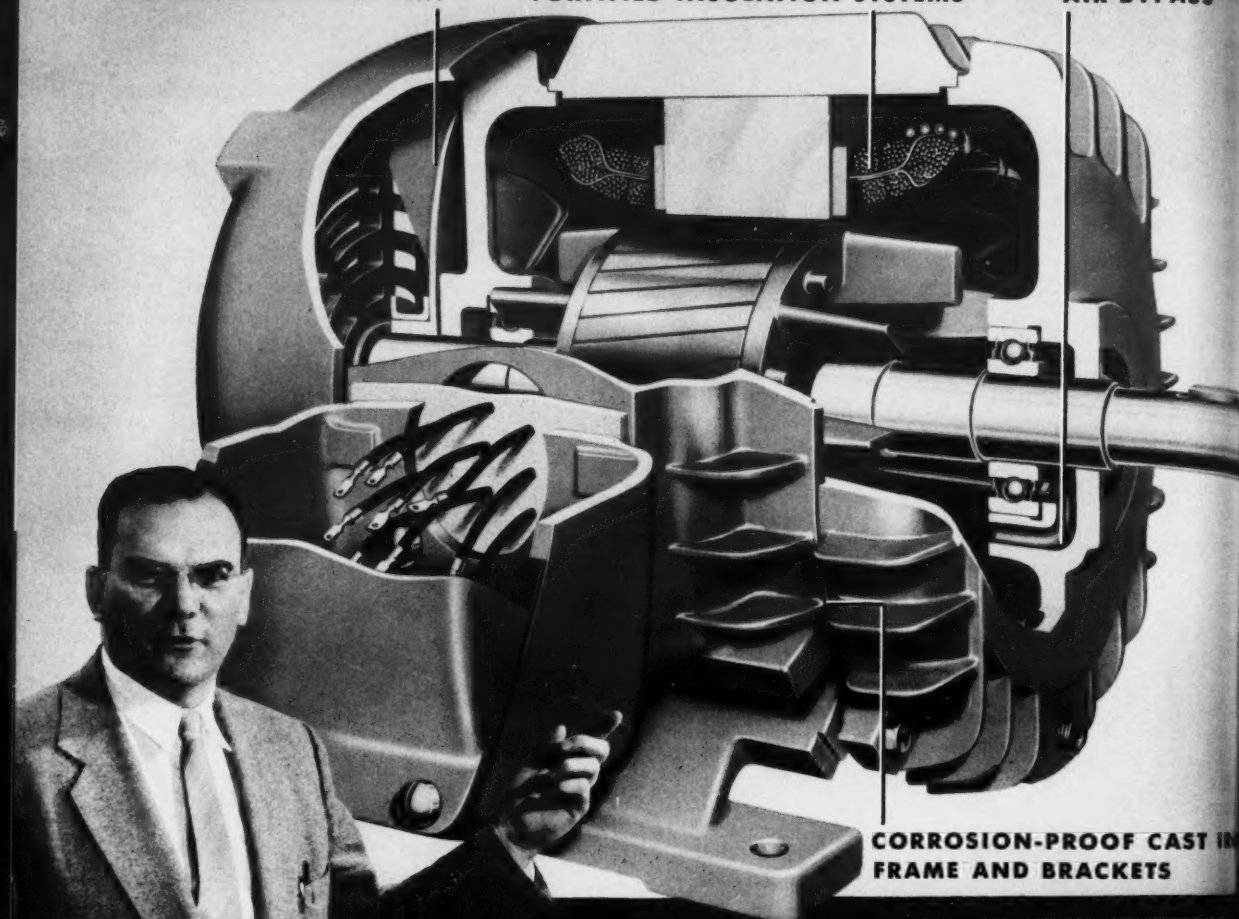


New *Life-Line A* motor in **CAST IRON,**

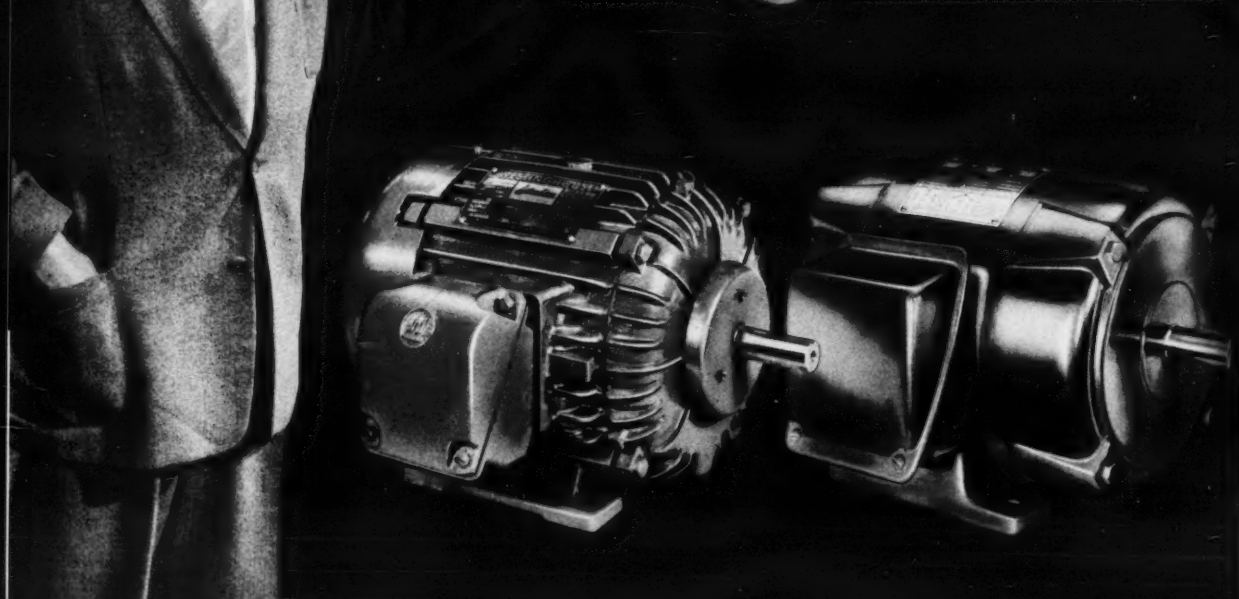
CORROSION-PROOF FAN

FORTIFIED INSULATION SYSTEMS

AIR BYPASS



CORROSION-PROOF CAST IRON FRAME AND BRACKETS



and
more

Setting
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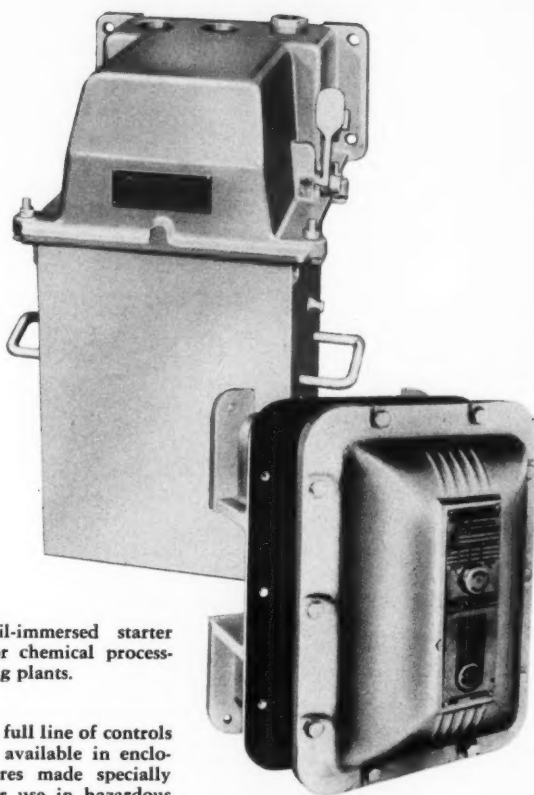
Setting big, new standards of performance is the new Westinghouse Life-Line "A" *better-protected* Motor. Here is a power package that is physically smaller, mechanically stronger and electrically longer lasting than *any* conventional motor.

Two basic models for all chemical plant applications—the dripproof for outdoor or other similar applications, and the totally-enclosed fan-cooled for corrosive applications—will assure you the same field-proved electrical performance Life-Lines have always given, but now in **CAST IRON** to withstand ravages of corrosive atmospheres. For 7-day week production, you now get:

1. Better protection for the lubrication system—new 4-way seal bearings, with double seals on each side of the bearing, effectively stop contamination. You still get the proved principle of pre-lubrication which prevents overgreasing or wrong grease—plus extra protection.
2. New fortified insulation: Mylar*, a slot insulation with greater dielectric and mechanical strength; Bondar, a wire insulation with more heat resistance; Bondite, a stator insulation with greater strength to withstand destructive elements.
3. New armored enclosure, in **CAST IRON**, gives you even better protection against corrosion from chemicals, liquids or dirt, as well as protection against physical impact, and can be located anywhere and in any position.

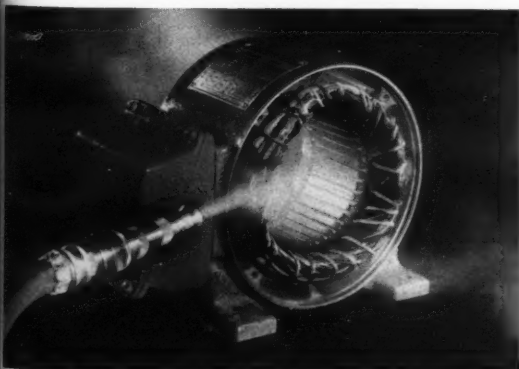
Rating for rating, horsepower for horsepower, the new Life-Line "A" Motor is the finest long-distance performer you can buy.

*DuPont Registered Trade-Mark



Oil-immersed starter for chemical processing plants.

A full line of controls is available in enclosures made specially for use in hazardous locations.



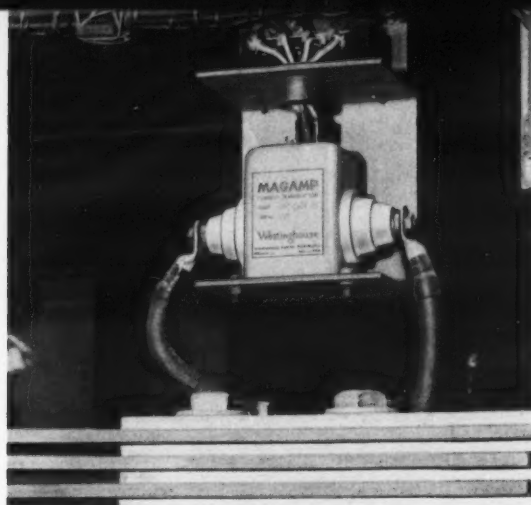
Life-Line's fortified insulation system provides higher thermal stability; resists moisture, oils, chemicals.



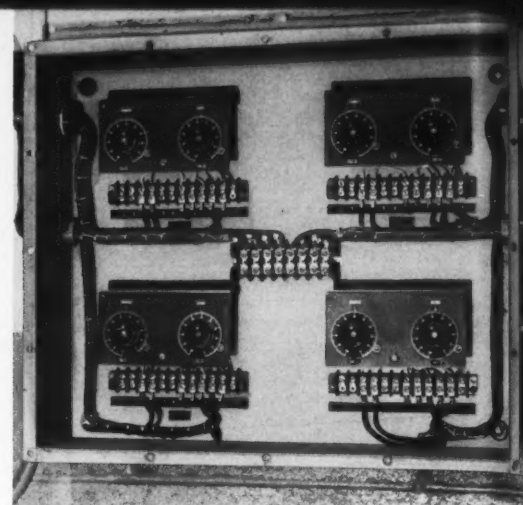
Here's a dust storm no motor will ever have to go through. Life-Line 4-way seal bearings stand up in any atmosphere.

YOU CAN BE **SURE**...IF IT'S **Westinghouse**





Westinghouse Magamp, transducer type, measuring amperage on a chlorine line.



Control panel serving Magamp unit.

Compact Magamp provides dependable check on d-c amperage consumed by Ignitron Rectifiers

A basic new regulating system, illustrated here on the chlorine line, is not only simpler and more compact than mechanical or rotating types, but is highly versatile as well. In this application, Westinghouse Magamp is used to totalize d-c amperage used in the banks of Ignitron Rectifiers.

Whether utilized for control of tension, voltage, current or speed, Magamp acts swiftly, accurately. Disturbances are instantly eliminated. Despite its small size and quick judgment, Magamp is ruggedly built, insensitive to normal shock and vibration. It has no moving parts—commutators, brushes, bearings—to wear, no tubes to burn out. It is a static device, and as such requires virtually no maintenance. Original resistor settings, made when the unit is installed, are permanent. Magamp is at your service and ready to go at the flip of a switch—no warm-up time needed.

For a low-cost production tool with high reliability in continuous operation processes, specify Westinghouse Magamp.

Westinghouse engineering can help you save power with the right combination of equipment

The most efficient, productive way to apply electrical equipment to arc furnaces or chemical processing lines is in an integrated system. Westinghouse builds all the necessary equipment, designed to work together. Why not put Westinghouse experience to work for you? Call us in early in the planning stage.

Inspection and repair needs are answered promptly by Westinghouse maintenance

Another important link in economical power supply can be the nationally recognized Westinghouse Maintenance and Repair Service, operated on the local level for fast—even emergency—service. To keep your plant producing, Westinghouse offers: equipment repair or reconditioning in 38 plants; inspection and on-the-spot repairs for equipment that cannot be moved easily through 56 field service offices; fast delivery of genuine Westinghouse Renewal Parts from stock in 31 locations.

MP-3028

For product literature, check the coupon below, and mail to Westinghouse Electric Corporation, 3 Gateway Center, P. O. Box 868, Pittsburgh 30, Pa.

- ☐ How to Get the Most Out of Arc Furnaces B-4695
- ☐ Life-Line Gearmotors B-5645
- ☐ Speed Reducers B-5646
- ☐ The New Westinghouse Control Center B-4213
- ☐ The New Life-Line "A" Cast-Iron Motor B-6154

- ☐ Motors & Controls in the Chemical-Processing Industries B-4792
- ☐ Power for Electrolytic Processes B-5466
- ☐ Preventive Maintenance B-5477
- ☐ How to Select AB Circuit Breakers B-6141
- ☐ Planning Circuit Protection with Breakers B-6145

YOU CAN BE SURE... IF IT'S
Westinghouse



Name _____
Firm _____
Address _____ City _____ State _____
MP-3028

Results: Accuracy checks of fluorspar addition never show an error greater than plus or minus 2%, a considerable improvement over former procedure. Feed is being maintained at a continuous rate of several hundred lb per hour on these particular units. No trouble with dampness of material affecting operation of scales has been encountered. Units are compact and have required only a minimum of maintenance. In addition to the units in use at E. St. Louis, Alcoa recently installed a number of similar feeder scales, adapted for pneumatic control, in their new Chemical Products plant at Bauxite, Arkansas.

(Merchen scale feeders are manufactured by Wallace & Tiernan Incorporated, Dept. CP, 25 Main St., Belleville 9, N. J. . . or for more information reader may simply check CP 1485 on handy form, pages 2 and 3.)

**Stabilized liquid SO₂,
doesn't change form
in transport . . .**

assures success of special sulfonation process
for Ninol Laboratories' detergents

Problem: Transporting sulfur trioxide to its Chicago plant was an obstacle to Ninol Laboratories' plan for development of a salt-free sulfonated detergent. Trioxide has a tendency to polymerize to the asbestos-like, higher-melting alpha isomer (become sluggish or change to a more solid form.)

Ninol chose sulfur trioxide for its sulfonating process because it could produce a salt-free product without formation of water and accompanying waste disposal problem. Normal sulfonation, achieved by reacting the hydrocarbon with a large excess of 20% oleum, gave a product running about 15% salt and 85 to 87% active ingredient.

Solution: When "Sulfan" sulfur trioxide, a liquid containing 99.5% SO₂ in a more stable form, was introduced to the market, Ninol started using it in its process.

Results: This form of SO₂ overcame previous obstacles. Stable trioxide, plus special apparatus for its use in sulfonation, assures production of Ninex salt-free sulfonated detergents. The product itself permits formulation of more concentrated liquid detergents, and allows compounds to incorporate larger proportions of phosphate and other builders.

("Sulfan" sulfur trioxide is a product of General Chemical Division, Allied Chemical & Dye Corp., Dept. CP, 40 Rector St., New York 6, N. Y. . . or for more information check CP 1486 on handy form, pages 2 and 3.)

Mixing bowls made of Crucible stainless steel by American Car and Foundry Company, at its Milton, Pennsylvania plant.



The fact is stainless steel improves with wear, for the more it is used the harder and smoother the surface becomes. And there is never any surface plating to wear on a stainless product, for stainless steel is *stainless* all the way through.

Yes, Rezistal® stainless is a *natural* for products that must take long hard service, or that must resist corrosion or wear, or stand up under daily cleaning with strong detergents. Take, for example, the stainless mixing bowls shown. They'll give many years of trouble-free service. And their smooth, sanitary surface makes them especially suited to the processing of baked goods, candy, cosmetics or chemicals.

Be sure you take advantage of all the money- and time-saving qualities of stainless steel. And be sure you specify Crucible stainless . . . made by the country's leading producer of special purpose steels. You'll get fast delivery of the grade and size you need when you call Crucible.



CRUCIBLE

first name in special purpose steels

54 years of *Fine* steelmaking

STAINLESS STEELS

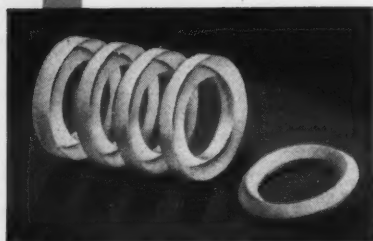
CRUCIBLE STEEL COMPANY OF AMERICA, GENERAL SALES OFFICES, OLIVER BUILDING, PITTSBURGH, PA.
REX HIGH SPEED • TOOL • REZISTAL STAINLESS • MAX-EL • ALLOY • SPECIAL PURPOSE STEELS

When inquiring check CP 1488 on handy form, pgs. 2-3

For more information on product at left, specify CP 1487 . . . see information request blank between pages 2 and 3.

MADE OF TEFLON[®] Chemiseal Packing

- ▶ won't contaminate
- ▶ won't deteriorate
- ▶ won't "freeze" shaft action



V-TYPE PACKING

Chemiseal Type 810 Teflon V-Packing for use in manual, air or motor operated valves. Construction and distinctive tapered V design offers chemically impervious service and greater flexibility and resiliency, providing necessary seal at low gland pressure and reduced torque on valve stem.



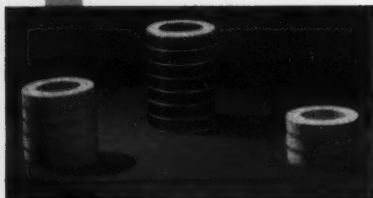
CUP AND CONE TYPE PACKING

Chemiseal Type 810-W Teflon Packing for both hand and mechanically operated valves. Cones deform inwardly to effect a seal at the spindle, while cups expand outwardly against stuffing box wall, making possible a tight seal at low gland pressure.



WEDGE TYPE PACKING

Chemical Type 810-WX Packing offers the unusually low gland load required for valves made of Havg, Karbate, ceramics, etc. Rings provide space for thermal expansion. Also adaptable for spring loading wherever exceptionally low friction load is required.



PUMP PACKING

Order Chemiseal Types 711-G, (graphite, impregnated) No. 711-M, (impregnated with mica) and No. 711-O (pure Teflon). For general purpose or non-contaminating pump service throughout the processing industries.

▶ Write for Catalog Number TP-1053.

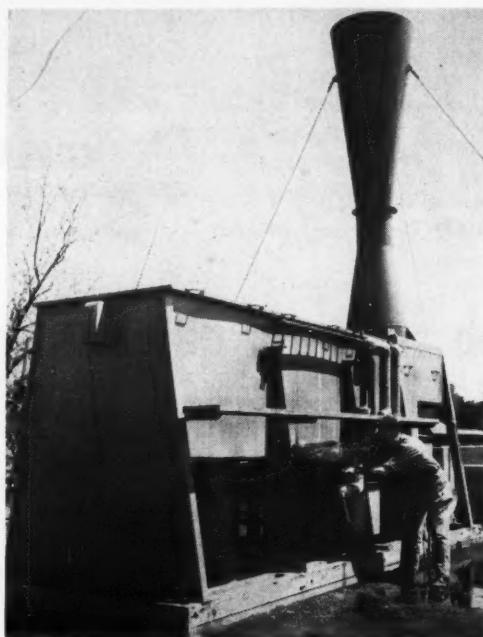
UNITED STATES GASKET COMPANY

CAMDEN 1 • NEW JERSEY
FABRICATORS OF duPont TEFLON,
Kellogg KEL-F AND OTHER PLASTICS
Representatives in Principal
Cities Throughout the World

NEW SOLUTIONS of processing problems

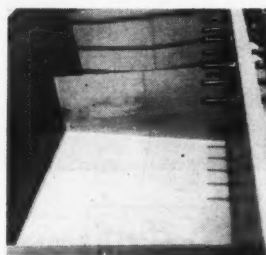
Acid fume absorption tower protected from corrosion by vinyl coating . . .

rubber-base and Epon-resin finishes resist severe conditions inside plant



Employee feeds water and soda ash into fume absorption tower for neutralizing acid vapors from hoods

Problem: Steel fume absorption tower at the Sigmond Cohn Corp., wire manufacturing plant in Mt. Vernon, N. Y., had to be protected from the effects of corrosive gases. Tower is subjected to hydrochloric, sulfuric, and nitric acids, as well as to chlorine and soda ash. Severe conditions were also present inside plant due to the use of several



Interior view of acid absorption tower after one year of continuous contact with corrosive fumes shows no wear

acids in the process. Several types of conventional coatings failed to meet requirements.

Solution: More than two years ago, fume tower was coated with a finish based on a vinyl-copolymer resin. This coating and two others—a rubber-base finish and a modified Epon-resin paint—have also been used inside

of plant for more than three years. Coatings were applied to all exposed machinery, benches, ducts, floors, walls, and ceilings.

Results: Plant manager reports that after more

for Coconut Oil

Fatty Acids

and Methyl Esters

rely on
EL DORADO

for **PURITY
SERVICE
UNIFORMITY**

El Dorado has specialized in coconut oil products for more than half a century. That's one big reason you can depend on the performance of El Dorado products in your formulations. You'll find that El Dorado's standards are the highest in the industry.

FATTY ACIDS		
CAPRYLIC	ELDHYCO	CAPRIC
LAURIC	COCONUT	MYRISTIC
	PALMITIC	
METHYL ESTERS		
CAPROATE	ELDO 18	CAPRYLATE
CAPRATE	COCONATE	LAURATE
MYRISTATE		PALMITATE
*T. M. Reg.		

For samples and specifications, write
Dept. P

Rely on

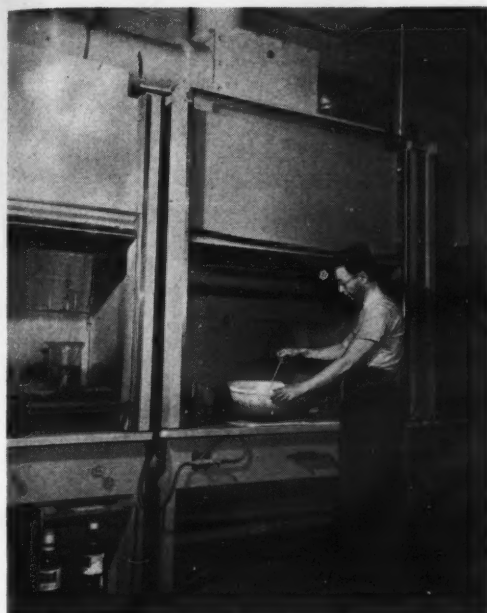


Main office:
PO Box 599, Oakland 4, Calif.
Plants:
Bayonne, N. J., Oakland, Calif.

When inquiring check CP 1490
on handy form, pgs. 2-3

CHEMICAL PROCESSING

When inquiring check CP 1489 on handy form, pgs. 2-3



Hood, ducts, wall, ceiling, and floor are all protected by corrosion-resistant coatings

than two years of service, both the inside and outside of fume tower are still in excellent condition. He emphasizes that if it were not for the protective coating, plant would have a bad problem with corrosion on the tower. Ducts and other equipment protected by coatings for more than three years are still in perfect working order.

(DEL protective coatings used at Sigmund Cohn Corp. are product of David E. Long Corp., Dept. CP, 220 E. 42nd St., New York 17, N. Y. . . . or check CP 1491, pages 2 and 3.)

Anodizing process improved by controlling water temperature . . .

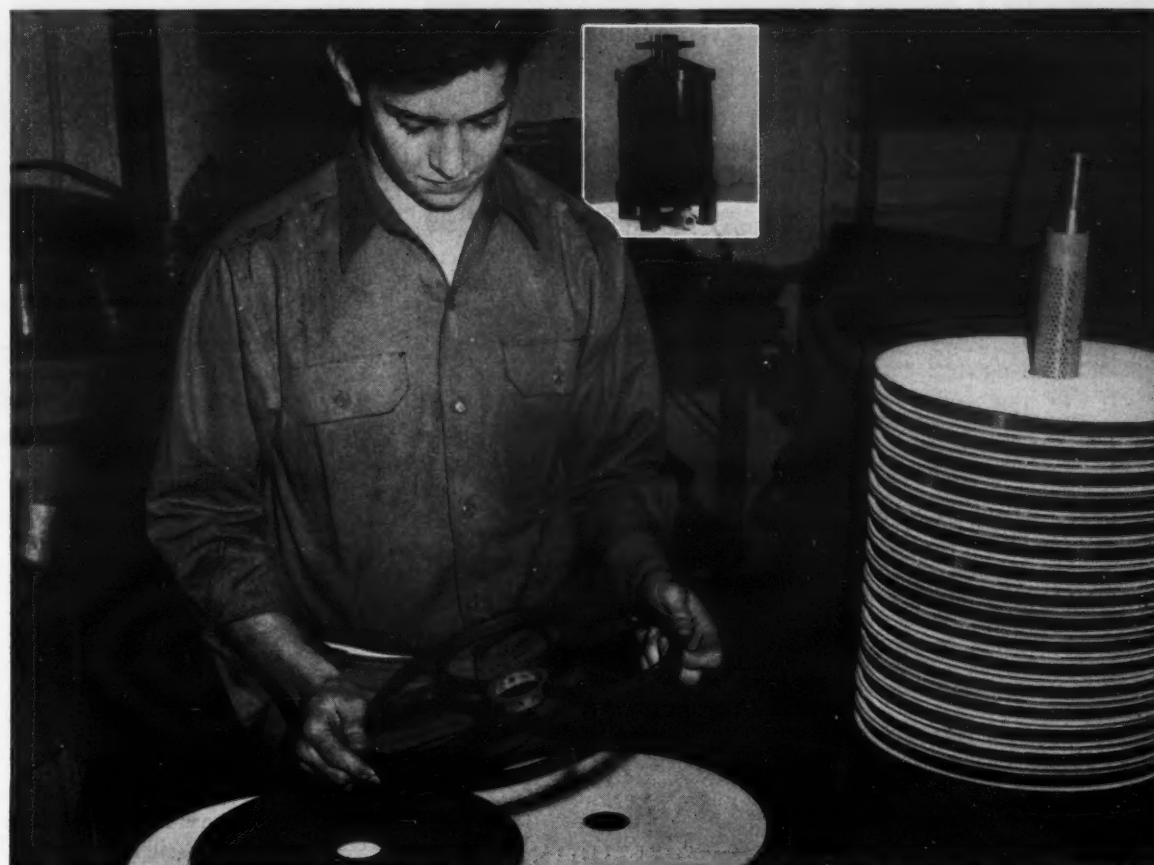
individual thermostatic controls regulate amount of chilled water going to each tank

Problem: The Colonial Alloys Company, Philadelphia, Pennsylvania, was having difficulty obtaining uniform finishes on parts being anodized by its then developmental EC (electrodeposition conservation) process — particularly during hot months. Studies indicated that the trouble could be due to variations in temperature of the anodizing solutions, which depended largely upon the temperature of the incoming city water.

Tests showed that best results could be obtained with anodizing solution temperatures at 80°F; however, a working range of 70 to 90°F was acceptable. City water temperatures were usually higher, especially during the summer months. It was also found that for each load anodized in

(Continued on next page)

Another new development using B. F. Goodrich Chemical raw materials



Filter unit contains filters, fittings and inside rings made from rigid Geon. Operator pictured holding an inside ring.

B. F. Goodrich Chemical Company does not make this filter. We supply only the High-Impact Geon resin.

RIGID PLASTIC FILTER COSTS NO MORE..GIVES 6 TIMES MORE WEAR

INDUSTRIAL acid filters made of Geon rigid vinyl plastic are setting new records in cutting costs of nickel plating bath operations. Where stainless steel filters lasted only 3 weeks to 3 months in corrosive nickel plating solutions, these vinyl plastic filters have been on the job for nearly 18 months—with no signs of wear! The cost of the vinyl filter runs about the same as a stainless steel one, but the 6-times longer wear means huge replacement cost savings.

The exceptional resistance of Geon

rigid vinyl to the highly corrosive nickel plating solution, maintained at a temperature of 120°F., points up only one advantage of this basic material. For instance, products made from Geon rigid vinyl can be machined, welded, sawed or drilled. They also resist abrasion, many acids and chemicals.

Geon polyvinyl materials have a wide range of uses in the chemical industry—from rigid filters, tubing, and sheeting to tank and drum linings. We'll help you select the Geon mate-

rial best suited to your needs. For information, please write Dept. GF-4, B. F. Goodrich Chemical Company, Rose Building, Cleveland 15, Ohio. Cable address: Goodchemco. In Canada: Kitchener, Ontario.



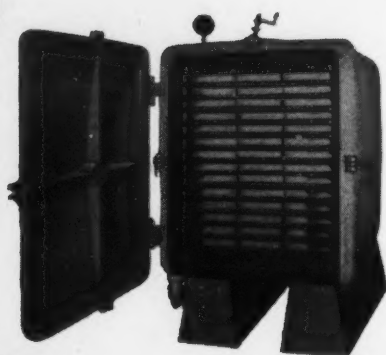
GEON RESINS • GOOD-RITE PLASTICIZERS . . . the ideal team to make products easier, better and more saleable
GEON polyvinyl materials • HYCAR American rubber • GOOD-RITE chemicals and plasticizers • HARMON colors

When inquiring check CP 1492 on handy form, pgs. 2-3

FOR *faster*

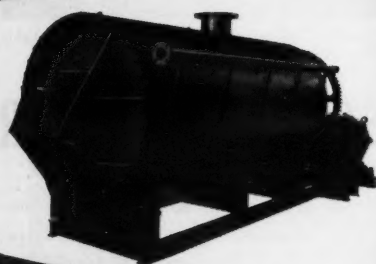
VACUUM CHAMBER DRYER

Especially designed by DEVINE to dry drugs, foods, chemicals and other materials that must be subjected to high heat, or agitated or broken while drying. Material is dried on heated shelves under vacuum. Easy regulation of heat and vacuum provides positive control of drying process. Available in either cast iron or fabricated steel.



POSITIVE CONTROL

PERFECT UNIFORMITY



VACUUM ROTARY DRYER

Ideal for low-temperature drying of materials that may be mixed or tumbled while drying. This type of Devine Dryer may also be used for solvent recovery. Dryer consists of a jacketed steel shell equipped with or without a central heating tube. Durable . . . efficient . . . economical.

Devine Engineers are Specialists in solving tough drying problems and those involving other Process Equipment. Write for bulletin and details.

J. P. DEVINE MFG. CO.

49th Street and A.V.R.R.

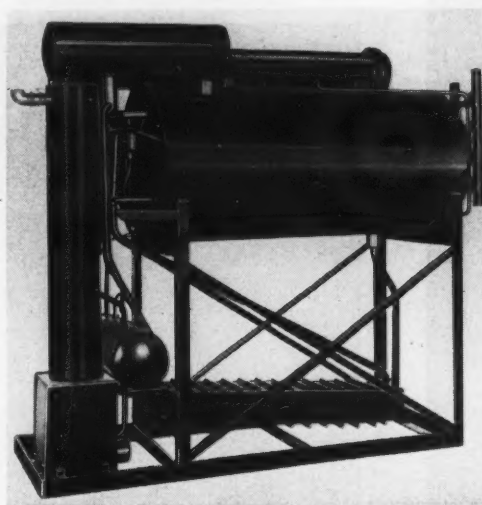
Pittsburgh 1, Pa.

Devine
PROCESS EQUIPMENT

When inquiring check CP 1493 on handy form, pgs. 2-3

NEW SOLUTIONS of processing problems

(Continued from preceding page)

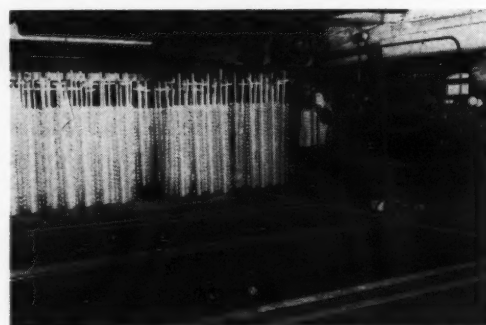


25-ton water chiller used in EC anodizing process

the tanks, temperature of the solution increased from two to six degrees. If the incoming water was 75 or 80°F, only a limited amount of anodizing could be done before the temperature of the solution reached its maximum allowable point.

Solution: The firm selected a 25-ton water chiller to maintain the anodizing solutions at the best temperature. Individual thermostatic controls regulate the amount of chilled water flowing into each tank.

Chiller is a hermetically sealed absorption refrigeration system operating on steam. It is virtually noiseless because there are no moving parts. Unit is 89 1/4" x 30" x 83 1/2" high and weighs 2500



Anodizing tanks at Colonial Alloys Company, Philadelphia, Pa. Water chiller is behind operator

lb. Entire unit operates under a vacuum at all times. Water is used as a refrigerant in the chilling system, and lithium bromide is the absorbent. The chilled water circuit, however, is under pump pressure, and is not a part of the regular vacuum system.

Results: EC process is now perfected and being licensed to other companies. Coatings are uniform

AIRCO GASES

Airco gases and liquids . . . rare gas mixtures . . . xenon . . . krypton . . . and neon conform to specification. You can count on their purity and consistent uniformity — every shipment packaged to your requirement!



Consult your nearest Airco office for complete information.

AIR REDUCTION

60 East 42nd St. • New York 17, N. Y.

Divisions of Air Reduction Company, Incorporated, with offices and dealers in most principal cities

Air Reduction Sales Company
Air Reduction Pacific Company

Represented Internationally by
Airco Company International

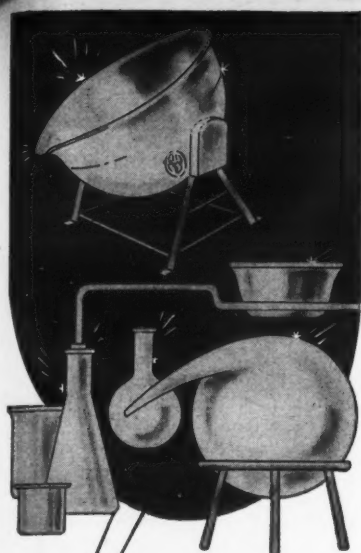
Foreign Subsidiaries: Air Reduction Canada Ltd.
Cuban Air Products Corporation

at the frontiers of progress
you'll find



When inquiring check CP 1494
on handy form, pgs. 2-3

CHEMICAL PROCESSING



IT COSTS LESS—

to do a **FASTER, EASIER, MORE EFFICIENT** cleaning job on your equipment.

Whether it's glass piping systems, metal, plastic or glass lined tanks, food kettles, laboratory equipment, optical lenses, etc. ALCONOX can, and will clean thoroughly, safely and at a low cost of less than 2½ cents per gallon.

Its extremely high degree of wetting power, stability and penetration has already placed Alconox at the top of the list: Its low cost only adds to this distinction.

We invite you to check all brands and their prices. Then compare with **WORLD-FAMOUS, TIME-PROVEN ALCONOX.**

Convince yourself: Then place your order. Literature, samples and the name of your nearest distributor on request.



Available in 50, 100 and 300 lb. drums

ALCONOX, INC.

WETTING AGENT

DETERGENT

61-63 Cornellison Ave.

Jersey City 4, N. J.

When inquiring check CP 1495 on handy form, pgs. 2-3

AUGUST, 1954

NEW SOLUTIONS of processing problems

What Is EC Anodizing?

An EC anodized coating consists of two films. A relatively porous film is generated first, followed by a non-porous one. The second film is formed under the first and directly on the aluminum surface beneath it. Dual film results in improved corrosion resistance, is flexible, resists abrasion, and takes wide range of colors. Because anodizing cycle takes only four minutes, an increase of five to five and one-half times more production is claimed — when compared to conventional processes requiring 30 to 35 minutes. Cost cuts of 1/20 to 1/100 are also reported. Conventional processes can be converted.

and, with savings resulting from 100% operations, capital investment for chiller was paid off in less than a year. Operation costs are reported to be negligible and maintenance costs nil.

Unit actually has an excess capacity, which is used to air condition the offices and provide chilled water for experimental work.

(Absorption-type Water Chiller is product of Air Conditioning Department, Servel, Inc., Dept. CP, Evansville 20, Indiana . . . or for more information check CP 1496 on handy form, pages two and three.)

Particles of jet-milled penicillin are 2 to 15 microns . . .

fluid energy mill provides additional capacity, results in labor savings

Problem: Additional capacity was required at Bristol Laboratories Inc., Syracuse, N. Y., for pulverizing drugs and antibiotics, including penicillin and streptomycin. Equipment was needed that would produce a small particle size, avoid production delays, and operate economically.

Solution: In January 1953, a fluid energy reduction mill was placed in service. Injector feeds material from hopper into reduction chamber of unit. Pressurized air is discharged through suitable nozzles into reduction chamber at high velocities. Feed material is entrained by stream of circulating gas. Violent jet action in reduction chamber breaks up individual particles by impact and abrasion against each other.

Results: Particle size of material leaving fluid energy mill at Bristol Laboratories ranges from 2 to 15 microns. Mill is larger than previous jet mill and provides the required additional capacity. It has resulted in some savings in labor and has operated maintenance-free. In general, according to production manager, company is satisfied with unit.

(Fluid energy mill is product of C. H. Wheeler Mfg. Co., Dept. CP, Sedgley Ave. at 19th & Lehigh, Philadelphia 32, Pa. . . or for more information check CP 1497 on handy form, pages two and three.)

NOW! A LIGHTER-COLORED DIMER ACID HAS MANY MORE USES

Improved process now assures adequate supply of this unique chemical intermediate

Designated as Empol 1022 Polymerized Fatty Acid, this unique C₃₆, unsaturated dibasic acid offers unlimited utility in many unusual applications. Check over these typical characteristics and see if Empol 1022 has a place in your development program.

Typical Characteristics

Acid Value	185
Saponification Value	190
Neutralization Equiv.	300
Color, Gardner	9
Viscosity at 25°C (Gardner-Holdt)	Z4
Flash Point, °F	530

Perhaps these present applications of Empol 1022 may suggest related uses to you.

Polyamide Resins

Polyesters

Esters

Soaps

Metallic Soaps

Sulfurized Esters

Corrosion Inhibitors

Resins

Varnishes

Alkyd Resins

Bodied Oils

Adhesives

Plasticizers

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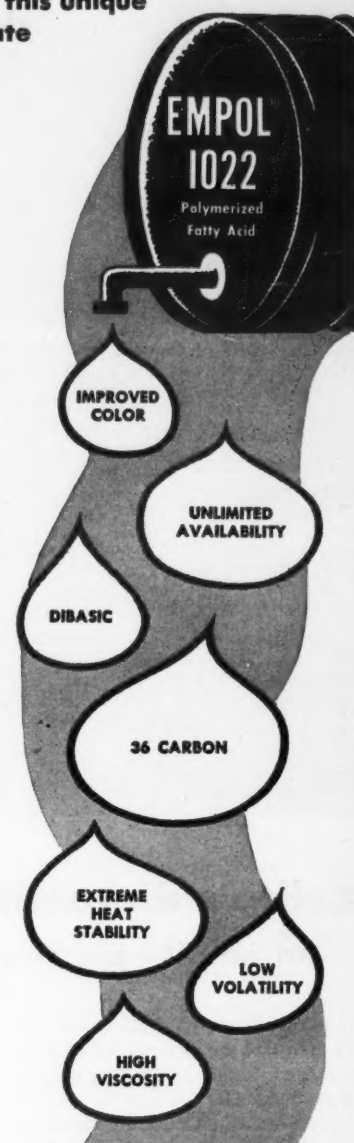
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Please send me complete information on Empol 1022 Polymerized Fatty Acid

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When inquiring check CP 1498 on handy form, pgs. 2-3

Microscopic "Snowflakes" of silica . . .



Celite's diatomite structure steps up performance in paints—plastics—polishes : : . hundreds of other products

MICROSCOPIC PARTICLES of Celite* do a man-size job of stepping up performance for many of America's leading products. Here is how the unique structure of Celite Diatomite Powders may add more beauty, longer life, greater efficiency to *your* products, too.

For example, the spiny, irregularly shaped particles contribute surface characteristics which make them the outstanding flattening agent in paints. Again, because of their structure, Celite particles are widely used as a

mild, non-scratching abrasive in finest quality auto, silver and glass polishes. Or consider molded plastics, where the strength and durability of Celite particles add life and beauty to surface finish.

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*Celite is Johns-Manville's registered Trade Mark for its diatomaceous silica products.



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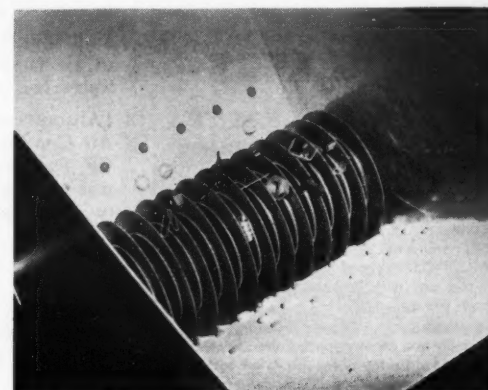
NEW SOLUTIONS of processing problems

High-quality product assured by permanent magnet . . .

installed in mouth of automatic bagging scale to remove stray metal from plastic pellets

Problem: Apex Tire and Rubber Company, Pawtucket, R. I., was searching for a dependable and automatic method of removing tramp iron and other ferrous metal from its production line of plastic pellets.

Solution: The company selected an Eriez 15" permanent non-electric hopper magnet which was installed in the mouth of its automatic bagging scale. The magnet consists of a series of 6" diam circular magnetic discs spaced at 1" intervals around a magnetic core. Needing no wires, it is installed by simply laying it in the throat of the hopper where it collects any ferrous contamination



Non-electric hopper magnet removes tramp iron and other ferrous metal from product at bagging station

present in the free-flowing material passing through it. Iron accumulations are cleaned from the magnet by lifting it from the hopper and wiping it with a cloth.

Results: Hopper magnet installation has completely eliminated stray metal from product.

(Hopper magnet is product of Eriez Manufacturing Company, Dept. CP, 1945 Grove Drive, Erie, Pennsylvania . . . or for more information check CP 1500 on handy form, pages 2 and 3.)

Chlorides resisted in production of chloromycetin by high-alloy cast valve . . .

withstands basic solution at 0 to 250°F for four years at Parke, Davis

High-alloy valves in a wide range of sizes and designs are utilized by Parke, Davis & Company, Detroit, Mich., in the production of chloromycetin to resist corrosion and maintain the quality of the product. One typical example is a flush-type stainless valve on a 1000-gal kettle in the chemical

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department. This valve, made of cast high-alloy type CF-8M, has been in service for four years.

Chloride solutions going through this valve have been mainly basic, with a pH ranging from 6 to a high of 12 or 13. Valve has not been out of the



High-alloy valve handling chloride solutions has required only routine maintenance in four years' service

tank and has required only routine maintenance. Chloride solutions are at atmospheric pressure or under vacuum, vary in temp from 0 to 250°F.

Cast stainless fittings of the same composition are used throughout the "sanitary" lines at the Parke, Davis plant. Temperatures of materials going through these lines vary from 0 to 250°F, while pressure ranges from atmospheric up to 80 psi. Here again, resistance to corrosion with its corollary attribute — prevention of fluid contamination — is maintained by the high-alloy cast components.

(Information was furnished through courtesy of Alloy Casting Institute, Dept. CP, Mineola, N. Y.)

(High-alloy flush-type valve in use on 1000-gal kettle was supplied by The William Powell Co., Dept. CP, 2503-31 Spring Grove Ave., Cincinnati 22, Ohio. Check CP 1501, pages 2 and 3.)

Waste treatment problems outlined, solved

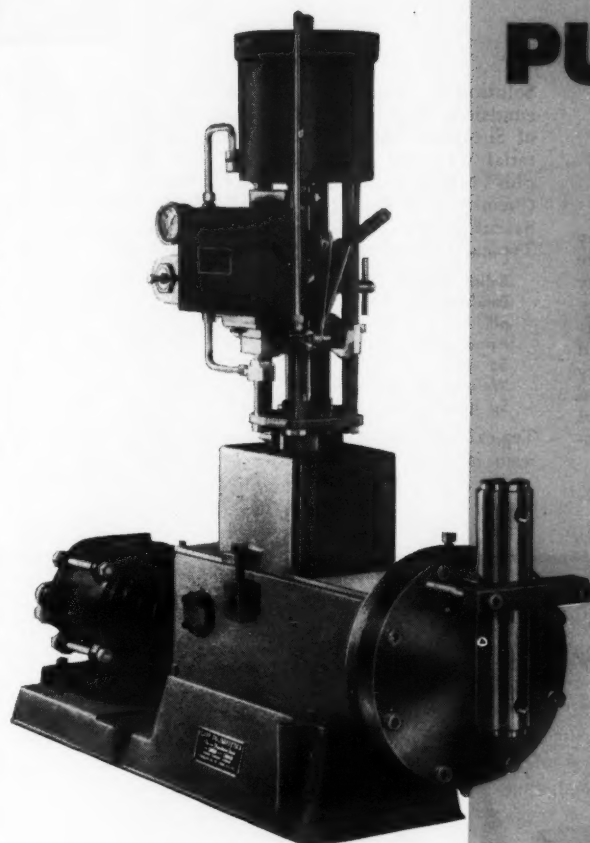
Advantages inherent in treatment of industrial waste waters and process liquors are described in four-page illustrated bulletin. Schematic drawings, pictures, and problem-solution-result explanations demonstrate how equipment solves process and cooling water shortages, contamination of streams with plant effluents, and loss of heat and materials in discarded waters.

Bul WC-116 is issued by Graver Water Conditioning Company, Dept. CP, 216 W. 14th Street, New York 11, New York. When inquiring specify CP 1502 on handy form, pages 2 and 3.

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WRITE FOR BULLETIN 300 with typical applications, flow charts, description and specifications of models of various capacities and constructions. Inquiry Data Sheet included from which we can make specific engineering recommendation for your processing requirement. Write Lapp Insulator Co., Inc., Process Equipment Div., 361 Wilson St., Le Roy, N. Y.

When inquiring check CP 1503 on handy form, pgs. 2-3

When acrylic resin emulsion is employed at Socony Paint Products Co. —

coatings dry in 15 minutes —have no odor

Easy brushing, excellent washability, storage stability, good adhesion, long film life are advantages of prime-sealer and wall finishes

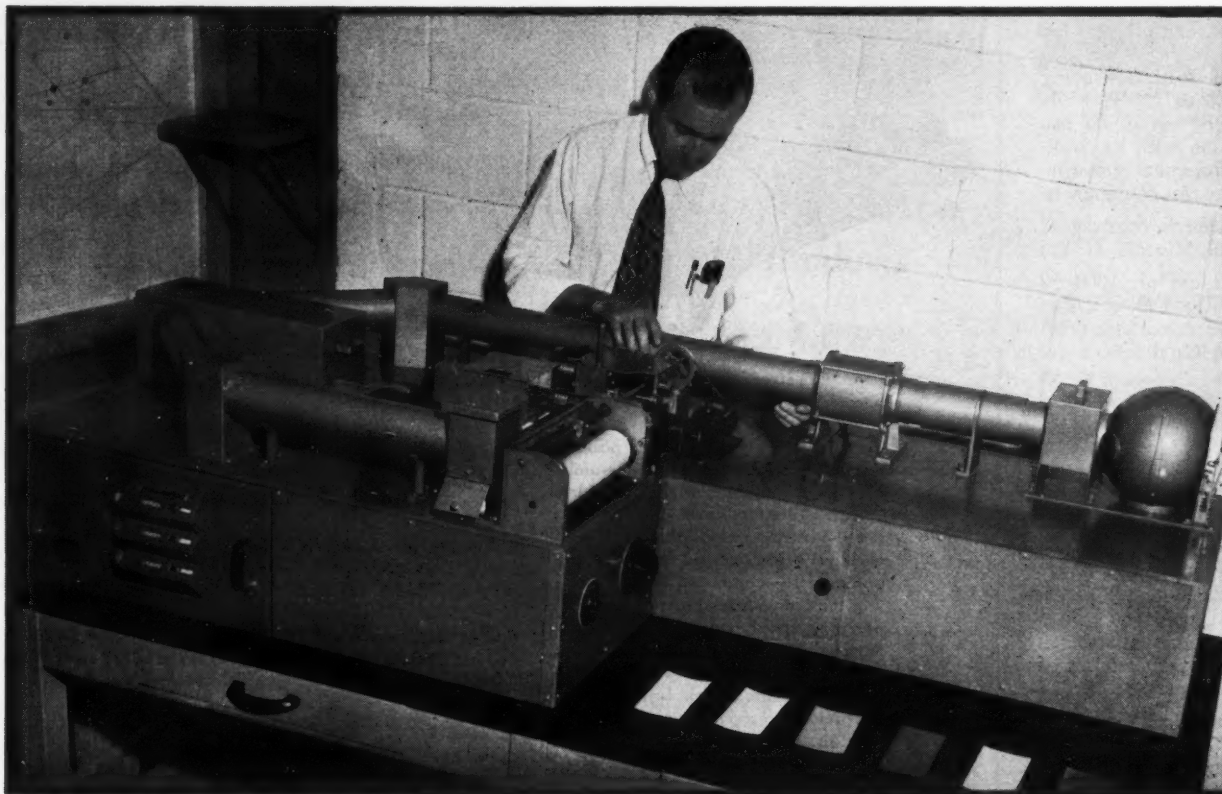
Problem: Research chemists at the Socony Paint Products Company, in Metuchen, N. J., were searching for a paint that would have quick-dry properties without sacrificing other characteristics. A number of synthetic latex emulsions were investigated. Some latices required a protective colloid to hold them in suspension and had unsatisfactory storage life. Others were ion-sensitive and could not be used with calcium-base pigments. Others required special equipment for processing or complicated formulations.

Solution: Company adopted an acrylic resin emulsion, known as Rhoplex AC-33, for its line of Socoplex Finishes. Reason for using this material was that it appeared to offer the desired plus values with little or no negative values. Chemically, resin is related to Plexiglas, the transparent acrylic plastic used for aircraft canopies. Typical properties of the emulsion follow:

Solids content, %	46±0.5
Emulsion vis, Krebs Units	65-80
pH	9.0-9.5
Appearance	Milky liquid
Sp gr	1.04
Weight per gal in lb	8.67
Sp gr of solids	1.09

Typical emulsion paint formula, in which acrylic resin is used, is shown in the table at the right.

Material	Pounds	Gallons
Rutile titanium dioxide	213.7	6.11
Calcium carbonate	47.1	2.08
Talc	82.9	3.83
Diatomaceous silica	92.5	4.82
Rhoplex AC-33 (46% solids)	407.3	46.95
Diethylene glycol	8.4	0.99
Antifoamer	2.1	0.25
Boric acid	6.3	0.53
Ammonium hydroxide (28%)	4.3	0.56
Acrysol A-1 (10% ammonium salt in water)	6.5	0.97
Tamol 731 (10% in water)	6.5	0.59
Water	251.3	30.30
Carboxy methyl cellulose (5% in water)	15.9	2.02
	1144.8	100.00



Porous cinder block wall in control laboratory of Socony Paint is painted with a white acrylic emulsion finish. G-E spectrophotometer is used to establish and maintain the close color standards of the coatings

◀ Operator loads pigment into a National Rubber Machinery Co. paste mixer used in the manufacture of acrylic resin emulsion paints

Results: Fast drying is one of the principal advantages achieved by use of the acrylic resin vehicle. Paint dries to a flat finish in minutes — not hours. It can be recoated in 15 minutes. Another benefit of value in painting the interior of buildings is that there is no solvent odor. Absence of objectionable odors makes it possible to paint in the daytime without disrupting business activities. These two factors together can result in a considerable reduction in labor costs.

Another advantage to the user is the ease of application. Coating can be applied by brush, spray, or roller without need to maintain a wet edge. Scrub resistance is high, paint being able to withstand 500 cycles made with a wet weighted brush and a combination of soap and abrasive cleaner.

Storage stability is excellent, with little pH drift. Protective colloids, such as casein or soya, are not needed. Paint adheres well to porous surfaces such as plaster, wallboard, cinder or cement blocks, and canvas. Film life is long. Emulsion solids are fully polymerized as supplied and no oxidation with subsequent embrittlement can occur. Other advantages to user are favorable appearance, good sealing properties, and easy removal of stains or marks. A primer-sealer and wall finishes are manufactured from the acrylic resin emulsions by Socony.

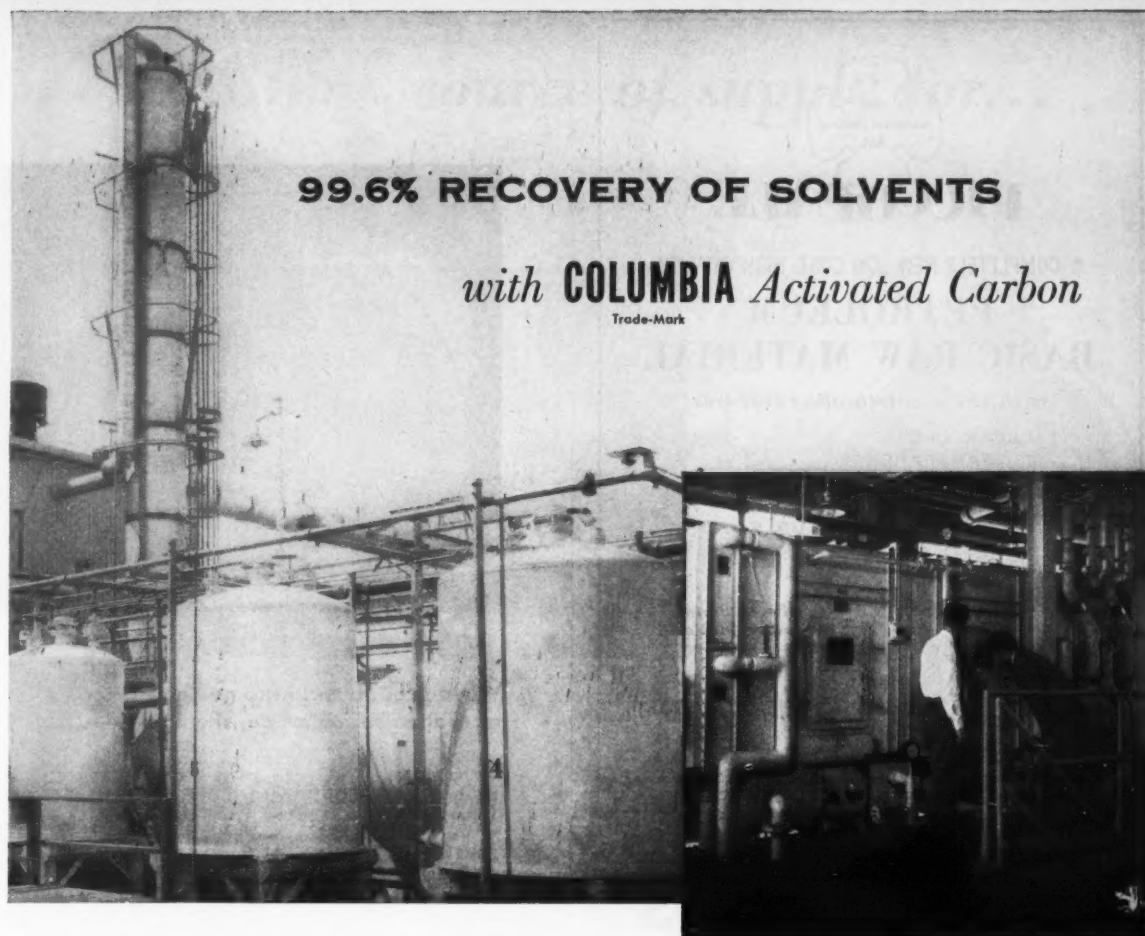
Company has found that no special processing equipment is needed to manufacture the coatings. A wide range of colors are offered since vehicle is compatible with many pigments. Other advantages for manufacturer include simplicity of formulation, no need for viscosity additives, no putrefaction problems, and good freeze-thaw stability.

(Rhoplex AC-33 acrylic resin emulsion is product of Rohm & Haas Co., Dept. CP, Washington Square, Philadelphia 5, Pa. . . . or for more information check CP 1504 on handy form, pages 2 and 3.)

(Socoplex Finishes are manufactured by Socony Paint Products Co., Dept. CP, Metuchen, N. J. . . . or for more information check CP 1504A on the convenient Reader Service slip located between pages 2 and 3.)

Looking for a chemical raw material or intermediate? . . .

The alphabetical Product Directory (pages 198 to 201) will help you find it in a hurry. This listing, started by CHEMICAL PROCESSING in 1938, "puts the finger" on all subjects, products, equipment in editorial columns and advertisements of each issue.



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Trade-Mark

Saves BAKELITE COMPANY \$27,000 a month

This modern, CARBIDE-designed solvent recovery system in this plastics plant at Bound Brook, New Jersey, collects more than 600 pounds of solvent vapors an hour from the manufacture of BAKELITE vinyl cast film. It separates the solvents and delivers them ready for re-use—with a recovery plant efficiency of 99.6% and a cost of 1.5¢ per pound.

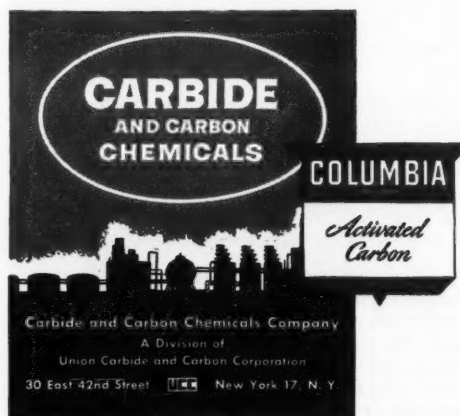
Two important features are behind this efficient, economical recovery. First, COLUMBIA Activated Carbon, with its long life and high adsorptive capacity for practically any low-boiling solvent. Second, the recovery plant, which was specially designed by CARBIDE's trained, experienced engineers to fit BAKELITE's recovery conditions.

All installations made by CARBIDE engineers are based upon careful surveys of the particular vaporization process. If the recovery problem is unusual, it is worked out on a pilot-plant scale. Then, the complete operating system is designed, supplied, and guaranteed by CARBIDE. Every recommended installation has paid for itself within a few years.

COLUMBIA Activated Carbon solvent recovery plants in use today save industry more than \$150,000,000 a year by recovering over two billion pounds of solvents!

Write today for the booklet, "Solvent Recovery by the COLUMBIA Activated Carbon System" (Form 4410). In Canada: Carbide Chemicals Sales Company, Division of Union Carbide Canada Limited, Toronto.

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When inquiring check CP 1505 on handy form, pgs. 2-3



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When inquiring check CP 1507 on handy form, pgs. 2-3

materials



Natural latex sponge (left) made according to recipe in tables

Same recipe minus Arquad 12 (below) took twice as long to gel, and foam collapsed



When used to facilitate gelling action of sodium silicofluoride, chemical —

sensitizes latex for sponge rubber

Quaternary ammonium compound cuts use of ZnO in process developed by S. N. Pinhasik of Armour and Co's Rubber Laboratory

In manufacture of sponge rubber by Dunlop (sodium silicofluoride) process, quaternary ammonium compound prevents collapse of froth before gelation. Functioning independently of zinc oxide, chemical allows a reduction of ZnO in formulations. In addition, it can be added to the latex mix prior to frothing.

One of the most critical steps in the Dunlop process is control of the latex gelation once the desired density has been reached. Too rapid gelling can cause incomplete filling of the mold, and even premature gelling in foaming apparatus, causing batch loss and a shutdown for cleaning. If gelation is too slow, excessive shrinkage, even foam collapse results.

That difficulties arise during gelation seems understandable when the complexity of the chemistry of the latex system is considered. When sodium silicofluoride, the gelling agent, is added to latex, which is anionic and quite highly alkaline, it is hydrolyzed to yield hydrofluoric and silicic acids. As hydrolysis proceeds, pH of mix decreases and the anionic dispersants that impart stability are in a sense neutralized. Latex particles agglomerate to the point

where they form a gel.

When fatty acid or rosin/fatty acid soaps are used as frothing agents, foam may collapse if gelation action is dependent upon sodium silicofluoride alone. To supplement and fortify gelation and to prevent collapse, "gel sensitizers" are added.

Arquad® 12 has been found to be an effective gel sensitizer. It functions without depending upon formation of zinc oxide complexes, permitting therefore a reduction in quantity of ZnO in formulation and its addition to the latex compound prior to frothing. Other advantages are:

- 1 — With a fixed amount of sodium silicofluoride, rate of gelation can be varied according to the amount of sensitizer that is used.
- 2 — Agent is non-staining and non-discoloring.
- 3 — Shrinkage is reduced, gel strength and foam volume are increased.
- 4 — Control can be maintained between batches, especially with frothing equipment.
- 5 — Only small amounts are required.

Arquad 12 is a cationic quaternary ammonium compound. When added to latex, it reacts with the anionic soaps to form oil-soluble, essentially non-ionized addition products. It is hypothesized that these products are absorbed on the rubber particle, thus reducing charge of particle and rendering the latex more sensitive to gelling action of the hydrolized sodium silicofluoride.

(Continued on next page)

Table I
typical natural and natural/synthetic latex
sponge rubber formulations

Material	Latex		
	100% Nat. Rubber	75% Nat. 25% GR-S	50% Nat. 50% GR-S
Basic natural latex compound*	103.8	77.6	51.8
20% K soap of Neo Fat 42-12	0.25-.60	0.50-.80	0.25-.50
GR-S Latex (type X-710 or X-667)	—	25.0	50.0
50% sulfur dispersion	1.5	1.5	1.5
50% Zn salt of M.B.T.	1.2	1.2	1.2
Arquad 12-Soap solution (on active Arquad)**	0.72-.90	0.90-1.08	1.08-1.44
Age at least 24 hr, then froth to desired density and add:			
50% ZnO	3.0	3.0	3.0
20% Na silicofluoride dispersion	0.7-1.0	1.3-1.5	1.7-1.8

Pour into mold and gel (gelling takes 4-5 min @ 68°F). Cure 1/2 hr @ 230°F

*Basic natural latex compound is made as shown in Table II

**Typical Arquad 12 — soap solution is shown in Table III

Table II
basic natural latex compound
As used in Table I.

Centrifuged natural latex (62% T.S.)	100.0
20% K soap of Neo Fat 42-12	0.5
50% antioxidant dispersion	1.0
Deammoniate to 0.15-20% NH ₃ , then add:	
20% K soap of Neo Fat 42-12	0.5
50% sulfur dispersion	0.5
50% Zn salt of 2-mercaptobenzothiazole	0.3
50% Zn diethyl dithiocarbamate	1.0
	103.8

Age in a closed tank for 10-20 hr @ 80-120°F

Table III
Arquad 12-soap solution
As used in Table I.

	Dry	Wet
Arquad 12 (50% in isopropanol)	1.25	2.50
20% K soap of Neo Fat 42-12	1.00	5.00
Water to 20% total solids	—	3.75
	2.25	11.25

NOTE: Weights in tables are on a dry basis

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Dispersant NI-W	Ortho-Xylene
Wetting Agents	Xylol
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Mercantile Securities Building, Dallas 1, Texas

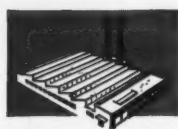
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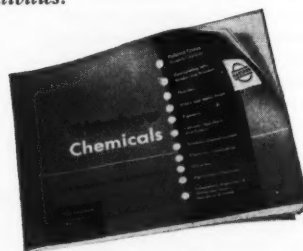


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MATERIALS

(Continued from preceding page)

To gain the maximum benefit of this sensitizer, following suggestions should be followed:

- 1 — Although a 5-10% aqueous solution of Arquad can be added to the latex with good agitation, best results are obtained by premixing an isopropanol solution of the sensitizer with a 20% potassium soap of Neo Fat® 42-12. This solution can be added rapidly with normal agitation and without fear of coagulation. Especially good results have been obtained by aging the sensitized latex for at least 24 hours before frothing.
- 2 — Amount of sensitizer added to formulation should never be sufficient to completely neutralize latex charge, otherwise immediate coagulation will take place.
- 3 — Quantity of Arquad required depends upon 1) kind of latex and 2) amount of anionic agents present. Quantity usually ranges from 0.25 to 0.6 parts of active Arquad per hundred parts of RHC. (This range is lower than that given in Table I because in use, Arquads are added in solution — see Table III.)

(Arquads are a product of Chemical Division, Armour and Company, Dept. CP, 1355 W. 31st St., Chicago 9, Illinois . . . or for more information check CP 1510 on handy form, pages 2 and 3.)

Affinity for surfaces of ferrous metal gives corrosion-inhibiting uses to modified fatty acids . . .

amide linkage is stable on heating, hydrolyzes slowly in presence of mineral acid

Uses: Compounds should be of interest in all applications where fatty acids are now used. Special promise is shown in use as corrosion inhibitors in oils and aqueous systems, lubricants and greases, emulsions, and toilet goods.

Features: Possessing a high degree of surface adsorption, materials cling strongly to ferrous metals and protect against corrosion at high humidity. Compounds do not adversely affect oxidation properties of lube oils. When treated with NaOH, KOH, NH₄OH, or alkylolamines, neutral water-soluble salts are obtained. These precipitate no free acid until pH is reduced below 5. Alkaline earth and heavy metal salts usually have a needle crystal habit.

Description: Sarkosyl L and Sarkosyl S are n-acyl sarcosines, prepared by reacting fatty acid chlorides with n-methyl glycine (sarcosine). Essentially modified fatty acids, the amide linkage is stable on heating and hydrolyzes slowly in presence of mineral acid. Amide linkage imparts increased crystallinity to the inorganic salts and improves solubility in water and most organic solvents.

Sarkosyl L is 96% lauroyl sarcosine (acid). Molecular weight is 270 and melting point is 42°C.

MATERIALS

Sarkosyl S is 96% stearyl sarcosine (acid); molecular weight 345; melting point 57°C. They have the general formula $RCONCH_2CH_2COOH$.

(n-Acyl sarcosinates are products of Alrose Chemical Co., Dept. CP, P.O. Box 1294, Providence 1, R.I. . . . or check CP 1511, pages 2 and 3.)

Phenolic molding compounds reduce transfer mold erosion by substantial amount . . .

combines fast cure, long draw characteristics

Uses: For long draw transfer moldings, such as television cabinets. Compound can be applied to compression molding.

Features: Material is formulated to be very low in erosive characteristics. Transfer mold life can be extended by at least 50% over conventional materials. Reduced downtime and mold maintenance result. Compound combines fast cure and long draw characteristics. Cured finish is smooth and has good gloss.

Description: Two-stage woodflour-filled thermosetting phenolic molding compound is known as 12882. Material comes in three colors—black, brown, and mahogany—and is available on a limited scale. Following are typical properties of the molding powder and the cured plastic.

Powder Properties

Apparent density (gm/100 cc)	52
Screen size (mesh)	6
Bulk factor	2.6
Flow range	110-150

Cured Plastic Properties

Tensile strength (psi, min)	7000
Flexural strength (psi)	10,000
Compressive strength (psi)	25,000
Impact (Izod, ft lb/in of notch, min)	0.32
Sp gr	1.35
Hardness (Rockwell)	M98
Shrinkage (mils/in)	6.5-8.5
Heat distortion temp (°F)	300
Dielectric strength (25°C, vpm @ 60 cy, inst)	350
Power factor (dry) @ 60 cy	0.30
@ 10° cy	0.06
Dielectric constant (dry) @ 60 cy	10.0
@ 10° cy	5.0
Volume resistivity (ohm-cm)	8×10^{11}
Insulation resistance (megohms)	4×10^4

In developing this low-erosion molding compound, radioactive tracer techniques were used to determine mold erosion by plastic formulations and their components. Using these data, a molding powder was formulated using materials found to be low in erosiveness. (For complete story on how this was accomplished, see pp. 44-45.)

(Molding compound is a development of Chemical Div., General Electric Co., Dept. CP, 1 Plastics Ave., Pittsfield, Mass. . . . or for more information check CP 1512 on handy form, pages 2 and 3.)

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Gentlemen: Please send me ☐ Prices ☐ Samples
on Solvay mercury cell Caustic Potash
☐ Flake ☐ Liquid

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When inquiring check CP 1513 on handy form, pgs. 2-3

Starting point for quality products

Quality products begin with quality ingredients. That's why Nialk

Chemicals are used today in so many exacting applications.

for example...

NIALK TRICHLORethylene: For fast, low-cost degreasing of metal parts, NIALK TRICHLORethylene is enjoying a rapidly growing acceptance. This superior degreasing agent cleans and dries in record time...is nonflammable...can be heated by either gas, steam or electricity...and is completely re-usable after distillation.

It is dependable performance like this that has earned for all NIALK chemicals the confidence of many American industries.

NIAGARA ALKALI COMPANY

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CAUSTIC POTASH

CARBONATE OF POTASH

PARADICHLOROBENZENE

CAUSTIC SODA

TRICHLORethylene

NIAGATHAL

(TETRACHLORO PHTHALIC ANHYDRIDE)

MATERIALS

Optically brightens cotton or rayon textiles...

can be dyed without dissolving chemicals

Uses: For whitening viscose rayon or bleached cotton yarn, knit goods, or woven fabrics.

Features: Whitener can be dyed without use of dissolving chemicals requiring extra dyeing and rinsing operations. Only a slight decrease in potential whiteness is apparent in peroxide bleach baths.

Description: Safaritone White C, a cellulose substantive brightener, is applied in the ratio one part to 1000-2000 parts water. It can be used at any temperature by padding or exhausting in dye bath in any stage of wet finishing. For full benefit, however, brightener is best applied during the rinse operation.

(Textile brightener for cotton and rayon is a development of The Hilton-Davis Chemical Co., a division of Sterling Drug Inc., Dept. CP, 2235 Langdon Farm Rd., Cincinnati 13, Ohio... or for more information check CP 1514 on handy form, pages 2 and 3.)

Three dozen organics listed in catalog

More than three dozen organic compounds are listed in manufacturer's 1954 catalog. Included in the list are Grignard reagents, N-halogen amides, and organo-magnesium halides. These are listed alphabetically and indexed by catalog numbers.

"Catalog of Organic Chemicals" is issued by Arapahoe Chemicals, Inc., Dept. CP, 2800 Pearl St., Boulder, Colo. When inquiring specify CP 1515 on the convenient Reader Service slip located between pages 2 and 3.

For more information on product at left, specify CP 1516... see information request blank between pages 2-3.

MATERIALS

Improves mechanical strength, moldability of mica-filled phenolic resin . . .

material is recommended for a variety of electrical applications

Uses: In radio tube sockets and bases, electrical condensers, terminal strips, and other electrical components where good electrical and mechanical properties are needed.

Features: Material represents important improvements in physical properties and moldability in combination with good electrical properties. These improvements result in better mold release and flow, faster cure, and fewer surface defects in finished product. Material resists cracking around inserts and other areas of high localized stress.

Description: Mica-filled phenolic molding material, Resinox 3001, has these physical properties:

Particle size	<10-mesh screen
Apparent density	0.59-.63
Pourability	Fair
Bulk factor	2.62-2.80

Specimens molded according to ASTM conditions, conditioned 48 hr @ 50°C, and then cooled in a desiccator 12 hr at room temp, have these properties:

Sp gr	1.65-1.67
Tensile strength (psi)	6000
Flexural strength (psi)	10,000
Impact strength (ft lb/in)	0.37
Dissipation factor (@ 1 mc)	0.017
Dielectric constant (@ 1 mc)	4.6
Insulation resistance (megohms)	1.3x10 ⁶
Shrinkage (in/in)	0.005
Water absorption (%)	0.087

(Mica-filled phenolic resin is a product of Plastics Div., Monsanto Chemical Co., Dept. CP, Springfield 2, Mass. . . or for more information check CP 1517 on handy form, pages 2 and 3.)

Chemistry, preparation, and uses of polyesters explained

An interestingly-written monograph of 52 pages explains in detail the chemistry, preparation, and uses of unsaturated alkyds or polyesters. Chemistry of polymerization and catalysts and promoters is given after the historical setting has been reviewed. Laboratory preparation of polyesters and polyester varnishes is discussed in great detail.

Uses for unsaturated polyesters in casting and potting compounds, glass fiber reinforced plastics, and molding compounds are summarized. A four-page bibliography and five-page list of U. S. and foreign patents on unsaturated alkyd copolymers and allyl resins are included in the spiral-bound bulletin.

"Composition and Utilization of Polyesters" is issued by National Aniline Div., Allied Chemical and Dye Corp., Dept. CP, 40 Rector St., New York 6, N. Y. When inquiring specify CP 1518 on the convenient Reader Service slip which is located between pages 2 and 3.

strikingly different

plus the help of NATIONAL starch research

starch properties

A FEW BRIEF EXAMPLES

SPECIALIZED STARCHES for...Ore Flotation...Paper...Textiles...Foods Leather...Cosmetics...Pharmaceuticals...Water Clarification...others

If you need a water repellent, free flowing starch . . . a starch with controlled swelling ability . . . a starch with the unique combination of emulsifying and thickening powers . . . any other properties . . . contact NATIONAL.

We're starch specialists. Our research laboratory is constantly exploring ways to derive new products from starch by truly chemical means: the introduction of new chemical groups or radicals into the starch molecule. The resulting molecules have an entirely new structure and exhibit strikingly different properties—which will find applications far afield from the present uses of starch products.

Our starch research staff is ready to match its time with yours in developing special starch properties or in applying developed starch properties to your products.

☐ **DRY FLO** powder, a derivative of ungelatinized corn starch, is free flowing, water repellent and easily suspended in organic solvents. **USES:** Dusting powder, fluidifying agent, lubricating agent, detackifier, emulsifier.

☐ **VULCAS** are modified starches with controlled swelling ability. They are supplied with varying degrees of granule toughness. **USES:** Inert nontoxic dusting powder, thickener for foods, cosmetics, in dry cells.

☐ **NAPONS** are chemically treated starches with the unique combination of emulsifying and thickening properties. **USES:** Textile, paper-tub or calender sizing, cosmetic emulsions, ore flotation.

☐ **CATO STARCH** is a cationic starch with high affinity for cellulose fibers. It improves the strength factors of paper and still permits high machine speeds. **USES:** Headbox additives, ore flotation, sizing, thickening agent.

☐ **CM STARCHES** are soluble in cold water and mix readily without lumping. They have good filming properties and impart grease or water resistance. **USES:** Tub sizing, calender sizing, coatings, beater and headbox additives.

☐ **AMIOCA**, a 100% amylopectin starch, gives clear, cohesive, nonjelling properties to pastes and films. Pastes are unique in the ability to recover original properties after freezing. **USES:** Textile sizings and finishes, paper sizings and coatings, foods.

☐ **NU-FILM** carbohydrate derivatives contain hydrophilic groups. They have lowered gelatinization temperature, excellent stability and rinsability. **USES:** Thickening agent, finger paints, pharmaceutical lotions, leather pasting, laundry starch, textile warp sizes.

☒ **CHECK THE STARCHES** you'd like to know more about for use in:



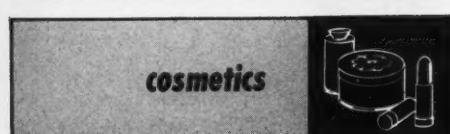
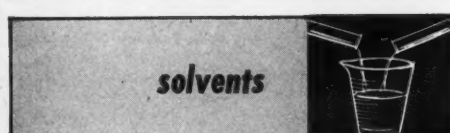
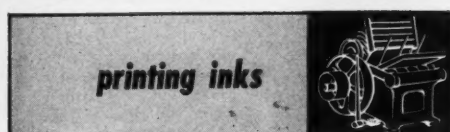
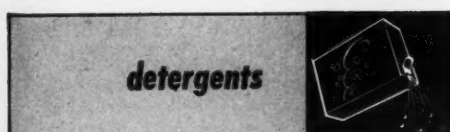
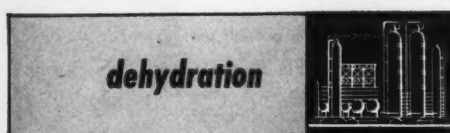
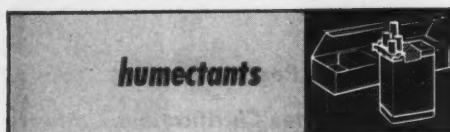
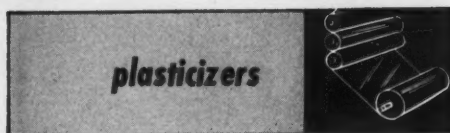
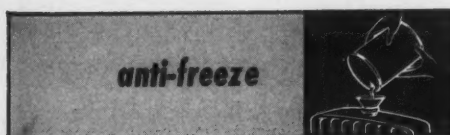
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When inquiring check CP 1519 on handy form, pgs. 2-3

looking for quality?



2552



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Ethylene Glycol
Diethylene Glycol
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MATHIESON CHEMICAL CORPORATION
Mathieson Industrial Chemicals Division
Baltimore 3, Maryland

When inquiring check CP 1520 on handy form, pgs. 2-3

MATERIALS

Booklet contains six papers on soaps and detergents

Twenty-five-page booklet contains six papers covering hard water soap analysis, detergents for dry cleaning, detergent effects on sewage treatment, dynamic test for detergency of hard surfaces, asphalt tile cleaner specs, and temperature rise test for phases I and II in sodium triphosphate. First five of these papers were presented at the March 1953, meeting of ASTM Committee D-12; sixth paper was added because of its related interest.

To obtain "Papers on Soaps and Other Detergents" remit 75c direct to American Society for Testing Materials, Dept. CP, 1916 Race St., Philadelphia, Pa.

Corrosion, bactericidal inhibition, hard-surface detergency imparted by cationic wetting agents . . .

series derived from ethylene oxide and primary, aliphatic *tert.*-alkylamines

Uses: Specific members of series can be used as organic corrosion inhibitors in rust-preventive greases, oils, and slushing compounds, automotive radiator coolants, corrosive insecticide or refrigerant formulations, and cutting lubricants and coolants. They should be worth consideration as combination corrosion inhibitors and bactericides for flood waters used in secondary oil recovery. They can be used as cationic surface-active agents in hard surface detergent compositions.

Features: Combinations of the series are effective in preventing corrosion of mild steel by aqueous HCl and H₂SO₄, even at temperatures as high as 175°F and periods as long as 6 hours. The acetate and glycolate salts of some members of the series have pronounced bactericidal activity. As surface tension reducers, their activity is effective in concentrations as low as 0.001%. Foaming properties are low.

Description: Priminox products are derivatives of ethylene oxide and manufacturer's Primene amines, primary, aliphatic *tert.*-alkylamines. Products' general chemical formula is



where "n" equals one for Priminox 43, five for Priminox 10, 15 for Priminox 21, and 25 for Priminox 32. They are available in developmental quantities.

Typical Physical Properties of Priminox Series

	43	10	21	32
Appearance	Dark, viscous clear liquids	Dark semi-solid	Brown waxy paste	
Neutral equivalent	405	609	977	1524
pH of 5% aqueous solution	—	8.3	8.9	8.9
Ash (%)	0.44	0.3	0.5	0.3
Water (%)	nil	0.2	0.2	0.2

CHEMICAL PROCESSING

In gener
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most oil
soluble.
(Polyeth
Haas Co
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CP 1520

Resin-e
Imparts
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Uses:
styrene-l

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AUGUST

In general, water solubility increases and solubility in hydrocarbon solvents decreases with increasing polyethoxy chain length. Priminox 43 is therefore the most oil-soluble of the series; 32, the most water-soluble.

(Polyethoxy amines are a development of Rohm & Haas Company, Dept. CP, Washington Square, Philadelphia 5, Pa. . . or for more information check CP 1521 on handy form, pages 2 and 3.)

**Resin-emulsion for latex paints
imparts viscosity stability,
permits high loading . . .**

compatible with styrene-butadiene latices in all proportions

Uses: In formulations of resin-emulsion and styrene-butadiene latex paints.

Features: Formulations exhibit good viscosity stability, pigment suspension properties, brush clean-out properties, and recoatability. Good wetting properties permit loading up to 50% by volume.

Emulsion is compatible with styrene-butadiene latices in all proportions. It improves hiding properties and film-fullness of paints made with these latices. Adhesion, film toughness, and development of wash resistance are also improved. Paints show no tendency to foam or bubble.

Water and alkali resistance of paint formulations suit them for use on such surfaces as fresh plaster, concrete, or cinder block.

Description: Piccopale Emulsion is a mechanically stable emulsion of Piccopale Resin, and has a very fine particle size. It is light in color and contains no protective colloid. Physical properties include:

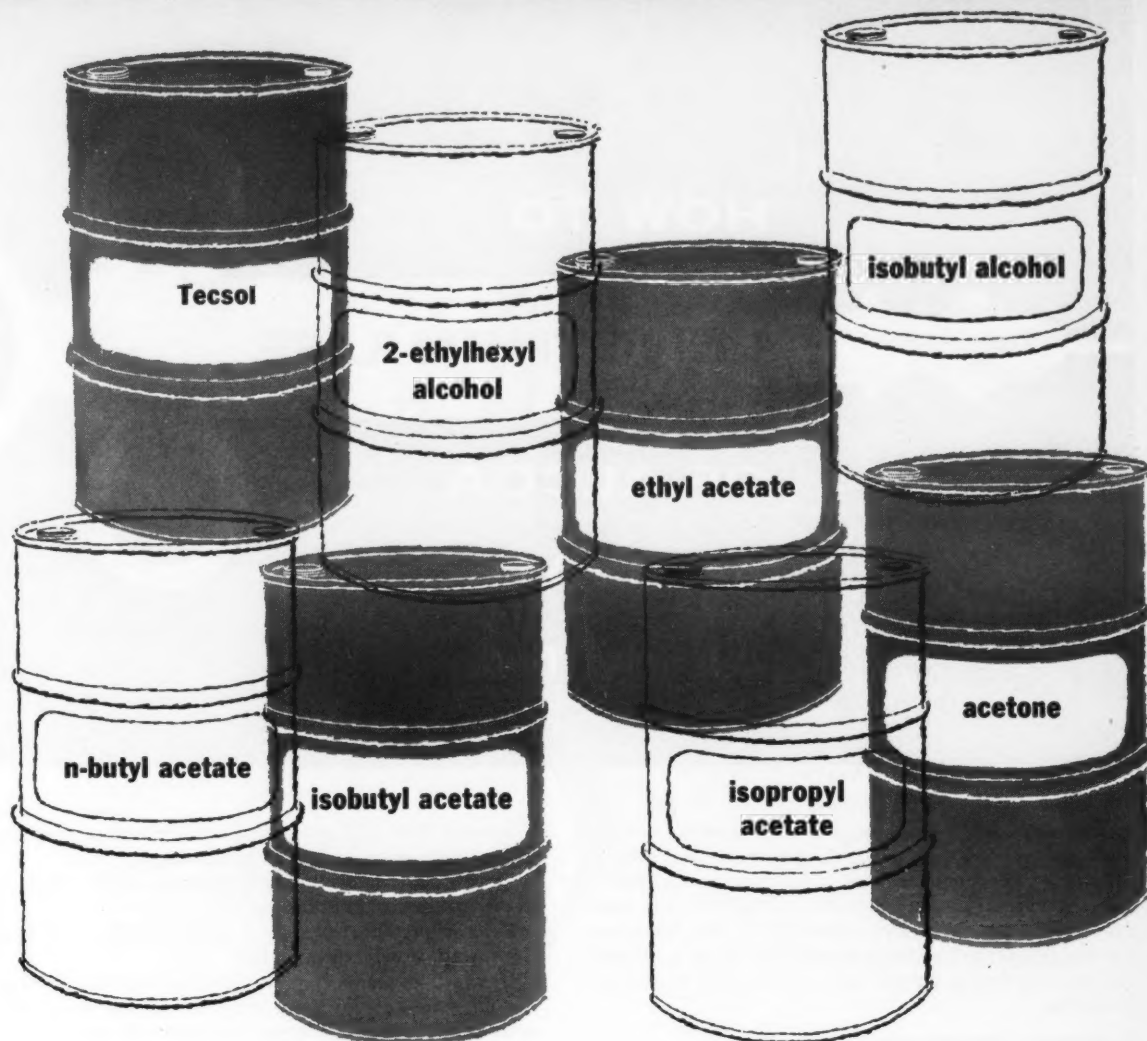
Solids by weight (%)	49-51
Lb/gal	8.2
Particle size (microns)	<1
pH	8.5-9.5
Type emulsifier	Anionic

(Piccopale Emulsion is a product of Pennsylvania Industrial Chemical Corporation, Clairton, Pa. . . or for more information check CP 1522 on handy form, pages 2 and 3.)

**List O.S. L- and D-amino acids
and manufacturing chemicals**

Company's manufacturing chemicals and L- and D-amino acids grade O.S. (optically standardized) are listed in two booklets. List of crystalline amino acids includes five additional L- and D-isomers: L-asparagine monohydrate L-isoleucine (alloisoleucine free) D-aspartic acid, D-leucine, and D-tryptophan. Specifications are included.

Lists on amino acids and manufacturing chemicals are available from Schwarz Laboratories, Inc., Dept. CP, 230 Washington St., Mount Vernon, N.Y. Specify CP 1523, pages 2 and 3.



Eastman solvents

These products are stored in bulk at Kingsport, Tennessee and Lodi, New Jersey, by Eastman Chemical Products, Inc., and in Chicago, Illinois, by DeMert & Dougherty, Inc.

Eastman CHEMICAL PRODUCTS, INC.

Kingsport, Tennessee
subsidiary of EASTMAN KODAK COMPANY

SALES OFFICES: Eastman Chemical Products, Inc., Kingsport, Tenn.; New York—260 Madison Ave.; Framingham, Mass.—65 Concord St.; Cincinnati—Carew Tower; Cleveland—Terminal Tower Bldg.; Chicago—360 N. Michigan Ave.; St. Louis—Continental Bldg.; Houston—412 Main St.; **West Coast: Wilson Meyer Co.,** San Francisco—333 Montgomery St.; Los Angeles—4800 District Blvd.; Portland—520 S. W. Sixth Ave.; Seattle—821 Second Ave.

When inquiring check CP 1524 on handy form, pgs. 2-3

HOW TO LENGTHEN LIFE OF ALCOA ACTIVATED ALUMINA

ALCOA Activated® Alumina, the "old reliable" among desiccants, is used to dry everything from furnace atmosphere to wind tunnel "air" and commercial gases. Nearly all of these users obtain longer service life than has been obtained in drying high-pressure natural gas. Here are some hints that will increase the effective life of Activated Alumina in drying natural gas, L.P.G., and petroleum products.

1. Remove Contaminants

After long periods of continued use, dust, fines or any water-soluble impurities such as salt, which may have accumulated, should be hosed out with water. Activated Alumina is completely resistant to action of liquid water. It can be reactivated and immersed again and again without shattering.

Use a precontactor or extractor containing discarded Activated Alumina to remove contaminating material.

Cooling action by shell-and-tube condensing units will coalesce the absorption and compressor oil from vapor phase, reduce much of the oil and reduce water content of the gas.

Avoid caustic carryover. Use a mist extractor to remove caustic spray.

In handling any natural gas, including underground storage, keep it free of oxygen so that it can be dehydrated without danger of deposition of sulphur.

2. Avoid Mechanical Damage

Operating desiccant beds above rated capacity may result in excessive through-put causing turbulence inside dehydrator, blowing a deep crater in top of bed and pulverizing the desiccant. Use a baffle plate to avoid this.

If upward flow lifts and abrades entire bed, completely fill top space with ALCOA Tabular Alumina Balls.

Design dehydrators to minimize mechanical vibration to prevent desiccant abrasion.

Release pressure in such a way that gas will pass downward, slowly, through bed.

If screen or support grate fails, use ALCOA Tabular Alumina Balls in layers of properly graded sizes, with small grate supporting largest balls around exit opening.

3. Reactivate Properly

ALCOA Activated Alumina should be reactivated to a minimum temperature of 350° F. Lower temperatures cause heavy fractions and water to linger, reduce adsorptive capacity.

Reactivate promptly after use. Reactivation gas flow should be in the opposite direction from dehydration flow. Liquid trapping should be eliminated. Reactivation by live steam is generally harmful to all solid desiccants and should be avoided.

These hints should help you increase the service life of ALCOA Activated Alumina. For complete details, or answers to your specific drying problems, write to ALUMINUM COMPANY OF AMERICA, CHEMICALS DIVISION, 705-H Alcoa Building, Pittsburgh 19, Pennsylvania.

ALCOA
CHEMICALS
ALUMINUM COMPANY OF AMERICA

When inquiring check CP 1525 on handy form, pgs. 2-3

MATERIALS

**Permits higher pigment loadings,
faster draining of paint batches,
improves fineness of grind . . .**

wetting, dispersing, and anti-settling agent is effective in many formulations

Uses: As a wetting, dispersing, and anti-settling agent for protective coating formulations.

Features: Product permits higher pigment loadings in premixer or ball and pebble mill. It also improves fineness of grind. Operating cycle is shortened by faster draining of milled batch from ball and pebble mill. This factor is important in puffy pastes and in highly pigmented formulas.

Description: A synergistic combination of surface-active agents, Nuosperse 657 is effective over a broad range of paint formulations. It has auxiliary film-forming characteristics, and no known deleterious effect on final product.

Physical Properties of Nuosperse 657

Viscosity (Gardner)	5
Color (Gardner)	11
Sp gr	0.965
Solids (%)	77
Acid value	10-13
Volatiles	mineral spirits

(Dispersing agent for paints is a development of Nuodex Products Co., Inc., Dept. CP, 802 Magnolia, Elizabeth, N.J. . . or for more information reader may simply check CP 1526 on handy form, pages 2 and 3.)

**Solvent and non-volatile properties
combined in methyl alkyl ketone
give wide compatibility . . .**

presence of methyl group and long-chain radical account for combination

Uses: As chemical intermediates for making amines, alcohols, active halides, oximes, and styryl and vinyl ketones to be used as polymers, oil additives, surface-active agents, lubricants, and essences.

The broad range of compatibilities of the ketones suggests such additional uses as ingredients in resin formulations and rubber recipes, mutual solvents in lacquers and varnishes, and as plasticizers. They could also serve as solubilizing aids to incorporate higher percentages of fatty derivatives into petroleum oils to improve detergency and other properties.

Features: Ketones contain a methyl group and a long-chain aliphatic radical. This offers the possibility of obtaining solvent properties of short-chain ketones in a compound with the non-volatile features of long-chain derivatives. Presence of short chain greatly improves compatibility of high mw ketones with other organic materials, such as hydrocarbons, alcohols, rubber, and resins.

Description: Representative physical properties of high mw methyl alkyl ketones, available in pilot plant quantities, are:

	Methyl Heptyl	Methyl Nonyl	Methyl Un- decyl	Methyl Penta- decyl	Methyl Hepta- decyl
Molecular weight	142	170	198	254	282
Melting point (°C)	-8 to -9	11-12	27-28	45-46	53-54
Sp gr (30°C)	0.832	0.829	0.825	—	—
Flash point (Cl. cup, °F)	160	192	225	248	255
Absolute viscosity (cp @ 30°C)	1.08	1.61	2.36 (solid)	(solid)	(solid)

Ketones are approximately 98% pure and are white in color. Preliminary tests indicate that they are relatively non-toxic.

(Methyl alkyl ketones are products of Research Div., Armour and Co., Dept. CP, Union Stock Yards, Chicago 9, Ill. . . . or for more information check CP 1527 on handy form, pages 2 and 3.)

Kills bacteria that causes breaking of water-soluble cutting oil emulsions . . .

bactericide is effective at low concentrations

Uses: In water-soluble cutting fluid formulations.

Features: Additive kills H₂S-forming bacteria that are one of the causes of corrosion. Emulsions not only last for longer periods of time, but skin-irritating effects are minimized and offensive odors prevented. Agent is effective in concentrations as low as 1:30,000 and is itself non-irritating and non-toxic in the proportions used.

Description: Oilidyn is a synergized colloidal dispersion of silver alloy (Movidyn) especially adapted to water-soluble coolants. (For article on Movidyn, see CHEMICAL PROCESSING, October, 1952, p 34.)

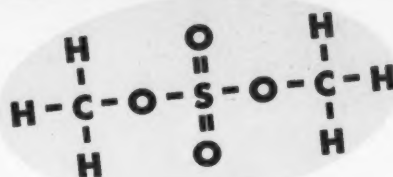
(Oilidyn is a development of The United States Movidyn Corp., Dept. CP, 863 N. Orleans St., Chicago 10, Ill. . . . or for more information check CP 1528 on handy Reader Service slip which is located between pages 2 and 3.)

Hot GR-S polymer specs revised by RFC

Nine revised pages and a new page have been issued for inclusion in RFC's sales catalog "GR-S & GR-I Synthetic Rubbers." The revised specification pages include Table A (Hot GR-S Polymers — Contd.), pp 1007-1, 1011-1, 1013-1 to 1016-1 incl., 1022-1, and 1023-1. Experimental hot latex X-695 has been assigned the standard number GR-S 2006, and a new page 2006-1 replaces blue page "X-695 — Hot Latex."

Revised pages are available from Technical Service Branch, Reconstruction Finance Corp., Washington 25, D.C.

AN IDEA-CHEMICAL FROM DU PONT



DIMETHYL SULFATE

METHYLATION PROPERTIES

—Effective methylating agent for preparation of methyl-substituted oxygen, nitrogen or sulfur compounds.

—Methylation is usually carried out in the presence of an alkali. While the first methyl group reacts more readily than the second, both groups react readily in an essentially anhydrous system.

—High reactivity toward active hydrogen compounds and high boiling point of Dimethyl Sulfate makes autoclaving unnecessary in methylation reactions. Methyl halides frequently require autoclaves in similar reactions.

SOLUBILITY DATA

—Soluble in water to extent of 2.8 g/100 cc at 18°C. Hydrolysis is rapid at or above this temperature.

—Soluble in alcohol, ether, benzene.

CORROSION CHARACTERISTICS

—Anhydrous Dimethyl Sulfate is inert to iron and steel . . . mildly corrosive to copper. Hydrolyzed solutions have the corrosion properties of sulfuric acid.

Here's an economical methylating agent you should investigate

Dimethyl Sulfate, a highly reactive compound, is a useful methylating agent in organic synthesis. Offering economy in methyl-substitution reactions, it is more reactive at low temperatures than most other methylating agents, and has a high boiling point (188.8°C.) which permits its use at atmospheric pressures.

A clear, colorless liquid, Dimethyl Sulfate is soluble in alcohol, ether and benzene. It is used in the manufacture of a number of synthetic drugs, including caffeine, codeine, antipyrine and methyl hydrazine sulfates. In addition, it finds application in the manufacture of dye intermediates.

Why not investigate the use of Dimethyl Sulfate in your business? We'll be glad to send you more information on this reactive methylating agent—specifications, properties, suggested uses, etc. Just send in the coupon below or write to: E. I. du Pont de Nemours & Co. (Inc.), Polychemicals Dept., Wilmington, Delaware.

AVAILABILITY: Du Pont Dimethyl Sulfate is shipped in tank cars, special 55-gallon returnable steel drums (net wt. 555 lbs.) and special 10-gallon returnable steel drums (net wt. 100 lbs.).

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E. I. du Pont de Nemours & Co. (Inc.)

Polychemicals Department 588, Wilmington 98, Del.

Please send me more information on Du Pont Dimethyl Sulfate—specifications, properties, suggested uses, bibliography, etc. I am interested in evaluating Dimethyl Sulfate for the following applications:

Name _____ Title _____
Firm _____
Address _____
City _____ State _____

When inquiring check CP 1529 on handy form, pgs. 2-3.

The Industries We Serve — PHARMACEUTICALS



W&D-4971

Age: 69 seconds

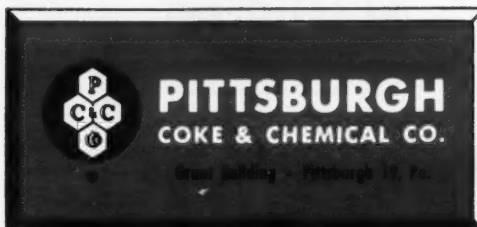
Life Expectancy: 69 years

LUCKY Junior! If he drives his rocket car carefully and doesn't overheat his atomic furnace, he's slated to spend a nice slice of his life in the 21st Century. He won't be haunted by most of today's diseases, that's certain. For medical science, hand in hand with the Pharmaceutical Industry, is already knocking off these killers, one by one. And chemicals from coal are right on the firing line.

Pittsburgh Coke & Chemical Co. is a *basic* producer of many of these vital materials. Some of the first sulfa drugs were made from coal-derived pyridine produced at our plant. Other Pittsburgh coal chemicals are showing bright promise in the experimental treatment of tuberculosis.

To pharmaceutical manufacturers, *Pittsburgh* stands for *purity*. For Pittsburgh coal chemicals are quality

checked from mining to final processing. It's the same story with Pittsburgh dyestuffs, plasticizers, agricultural chemicals and all other products of our ten integrated divisions: Better products for industry and agriculture... because Pittsburgh is *basic!*



COAL CHEMICALS • AGRICULTURAL CHEMICALS • FINE CHEMICALS • PROTECTIVE COATINGS • PLASTICIZERS • ACTIVATED CARBON • COKE • CEMENT • PIG IRON

When inquiring check CP 1530 on handy form, pgs. 2-3

MATERIALS

Reduces foaming encountered during blending, application of latex paints . . .

non-ionic surface-active agent used in leveling, wetting, emulsification

Uses: In rubber and resin latex paints for leveling, wetting, and emulsification. Material also suppresses foaming.

Features: Chemical acts rapidly and thoroughly without formation of excessive foam during grinding and mixing processes. Brushing and leveling of paints are improved.

Description: Use of 0.5-1.0% Polyethylene Glycol 400 Mono Laurate (on weight of pigment) promotes rapid and thorough wetting. Incorporation of an additional 0.1-0.5% into the latex immediately before mixing further suppresses foaming. Use of 2-3% agent is suggested in preparation of alkyd resin and plasticizer emulsions used in modification of latex paints.

The non-ionic surface-active agent itself does not necessarily eliminate need for defoamer in latex paint formulation, but it does reduce amount of such ingredients necessary and in some instances permits use of formulations and mixing equipment which could not be utilized otherwise.

(Foam-reducing surface-active agent is a product of Glyco Products Co., Inc., Dept. CP, 26 Court St., Brooklyn 1, N. Y. . . or for more information check CP 1531 on handy form, pages 2 & 3.)

Lowers time and temperature required in processing vinyl chloride resins . . .

series of acid esters possesses wide viscosity range, varies in freeze points, solubilities

Uses: Primary plasticizers for vinyl chloride resins. Other potential uses include lubricants, textiles, leather, and flotation.

Features: Materials possess a wide viscosity range and vary in freeze points and solubilities. They substantially lower time and temperature required to process vinyl chloride resins.

Description: Benzoflex 2-45 (diethylene glycol dibenzoate) and Benzoflex 9-88 (dipropylene glycol dibenzoate) are light-colored, mild-smelling, high-boiling, and stable. They are available in commercial quantities.

Higher glycol dibenzoates, available in developmental quantities, are compatible with selected vinyl resins, including polyvinyl acetate. Polyethylene glycol dibenzoates are compatible with phenol-formaldehyde resins, imparting flexibility and improved adhesive qualities.

(Technical data and experimental samples are available on letterhead request to Tennessee Products and Chemical Corp., Dept. CP, First American National Bank Bldg., Nashville 3, Tenn.)

Mold rel
is solven
silicone .

solven
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Uses:
for direct
process o
uses incl
molding

Features:
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gives clea
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ceous bui
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Description
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Typi

Silicone
Sp gr
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CHEMICAL PROCESSING

MATERIALS

Mold release agent is solvent-based silicone . . .

solvent evaporates leaving
thin, uniform parting film

Uses: As a mold release agent for direct application in the shell process of casting metals. Other uses include plastic and rubber molding and wood laminating.

Features: Solvent-based, mold parting agent is especially designed for use on deep draw, narrow draft patterns. When solvent evaporates, a thin, uniform parting film is left. Virtually incompatible with organic resins, it is not affected by thermosetting resin-sand mixtures, gives clean easy release of molded shell, does not form a carbonaceous build-up, and keeps mold cleaning time to a minimum.

Description: Identified as F-496 and F-452, products contain 5% and 50% solids, respectively, of high viscosity silicone fluids dissolved in mineral spirits. F-496 is designed for immediate use, F-452 for those who wish to make up concentrations to meet specific requirements. A suggested dilution is one part to 10 to 15 parts mineral spirits. Other suitable thinners are CCl_4 and perchlorethylene.

Typical Physical Properties

	F-496	F-452
Silicone (%)	5	50
Sp gr (25°C)	0.872	0.918
Flash point (°F)	120	120
Color	light	light
	straw	straw

Applied to patterns by spraying or brushing, one application will release several moldings of resin-sand shells, depending upon the intricacy of the pattern, resin-to-sand ratio, and time and temp of molding cycle.

(Silicone mold release agent is a development of Dow Corning Corp., Dept. CP, 592 Saginaw Rd., Midland, Mich. . . . or for more information reader may simply check CP 1532 on handy form, pages 2 and 3.)

For more information on product at right, specify CP 1533 . . . see information request blank between pages 2 - 3.

DAVISON BULLETIN

LIGHT AS A
FEATHER

SYLOID 244®

Syloid 244 is a highly porous pure silica gel of extremely low density. A free-flowing white powder, it appears as a fluffy snow weighing 4-4.5 pounds per cubic foot as shipped. Syloid 244 has an apparent particle size of 2-3 microns, yet individual particles are predominantly below one micron.

The chemical and physical characteristics of Syloid 244 makes it adaptable for many uses including the following:

- anti-blocking of clear plastic film
- an additive to inks for quick-drying
- a vinyl flattening agent
- anti-caking for powdered products
- thickening agent for salves, lubricants and plastigels

Progress Through Chemistry

DAVISON CHEMICAL COMPANY

Division of W. R. Grace & Co.

Baltimore 3, Maryland

Producers of: Catalysts, Inorganic Acids, Superphosphates, Triple Superphosphates, Phosphate Rock, Silica Gels and Silicofluorides. Sole Producers of DAVCO® Granulated Fertilizers.

TYPICAL CHEMICAL AND PHYSICAL CHARACTERISTICS OF SYLOID 244

Color white, 94 Hunter reflectometer
transparent in vehicles

Appearance uniform, free-flowing powder

Density
as shipped 4-4.5 lbs./cu. ft.
centrifuged in toluol 7.5 lbs./cu. ft.
true (specific gravity) 2.1-2.2

pH 7.2

Silica as SiO_2 (dry basis) 99.5%

Oil adsorption 240 lbs. oil/100 lbs. SiO_2

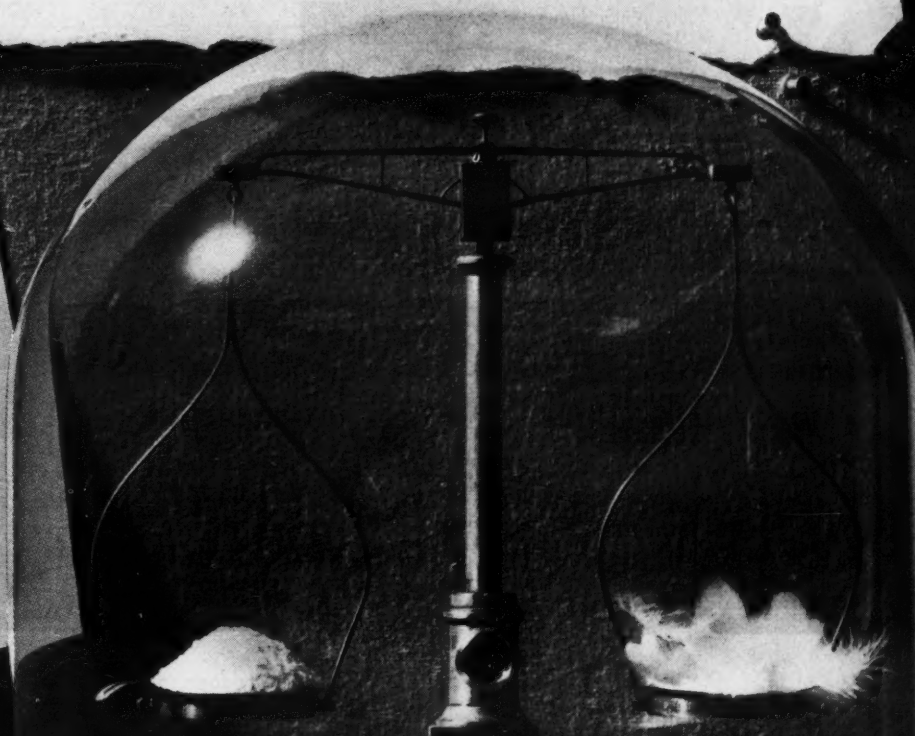
Surface area (nitrogen) 292 M_2/gram

PARTICLE SIZE DISTRIBUTION BY WEIGHT

(water sedimentation)	
5% less than 1.1 microns	
10	1.4
20	2.0
40	3.0
50	3.7
60	4.5
80	7.0

Low density
Syloid 244
shown balanced
with feathers.

Write for complete
information, suggested
applications, etc., or
contact your Davison
Field Service Engineer.



**Sodium
Polyphos**

SODIUM HEXAMETAPHOSPHATE
SODIUM TETRAPHOSPHATE

**Chlorinated
Trisodium
Phosphate**

**Tetrasodium
Pyro
Phosphate**

**Trisodium
Phosphate**
CRYSTALLINE
MONOHYDRATE

**Sodium
Tripoly
Phosphate**

Sodium



BLOCKSON
CHEMICAL
COMPANY
JOLIET, ILLINOIS

Phosphates

**Disodium
Phosphate**

ANHYDROUS
CRYSTALLINE

**Monosodium
Phosphate**

ANHYDROUS
MONOHYDRATE

**Sodium Acid
Pyro
Phosphate**

also major
producers of:
**SODIUM
SILICOFLUORIDE
SODIUM FLUORIDE
HYGRADE
FERTILIZER**

When inquiring check CP 1534 on handy form, pgs. 2-3

MATERIALS

Uses, properties of acetonitrile presented in eight pages

Properties, constant-boiling mixtures, solubility for diverse materials, uses, and suggested applications of acetonitrile are included in technical bulletin. A bibliography is also presented.

Material finds use in processing of fats, oils, and petroleum; in preparation of synthetic fibers, surface coatings, and pharmaceuticals; and as a starting material for many other chemicals. It is also used as a solvent and extractant, crystallizing agent, reaction medium, and a chemical reactant.

Bul F-7501 is available from Carbide and Carbon Chemicals Co., a div. of Union Carbide and Carbon Corp., Dept. CP, 30 E. 42nd St., New York 17, N.Y. When inquiring specify CP 1535 on handy form, pages 2 and 3.

Reprocessed fluorocarbon plastic retains many properties of virgin polymer . . .

economics of application favor extended use

Polytetrafluoroethylene reprocessed plastic possesses many of the outstanding properties of the virgin material.

Typical Properties of Fluoroplast

Tensile strength (psi @ 73°F)	1300
Elongation (% @ 73°F)	50
Heat distortion temp (°F @ 66 psi)	225
Sp gr	2.1-2.3
Dielectric strength (short time 0.125" specimen, v/mil)	425-450
Dielectric constant (60 to 10 ⁸ cy)	2.0
Dissipation factor (60 to 10 ⁸ cy)	<0.0005
Volume resistivity (ohm-cm)	7.2 x 10 ¹⁸
Surface resistivity (megohms)	3.6 x 10 ¹⁷

Fluoroplast is available in molded bars and cylinders, and extruded rods and tubing. Economic considerations favor extended use of the material.

(Reprocessed fluorocarbon plastic is a product of United States Gasket Co., Dept. CP, 602 N. 10th St., Camden 1, N. J. . . . or for more information check CP 1536 on handy form, pages 2 and 3.)

Uses of ethanolamines told

Physical, toxicological, and chemical properties, specifications, methods of analysis, uses, and handling and storage information on company's ethanolamines are presented in 40-page bulletin.

Introductory section touches on historical development of compounds. Bibliography, indexed by subject, lists 381 references.

Ethanolamine technical bulletin is issued by Jefferson Chemical Co., Inc., Dept. CP, 260 Madison Ave., New York 16, N. Y. When inquiring specify CP 1537 on handy form, pages 2 and 3.

CHEMICAL PROCESSING

Solid hydrochloride is source of HCl and betaine

Uses: As a source of HCl in solid form for use in solders and soldering fluxes, and for curing formaldehyde and furfural resins. Material is also a source of the betaine radical in synthesis of surface-active agents, quarternary ammonium disinfectants, and pharmaceuticals.

Description: Betaine hydrochloride, $(\text{CH}_3)_3\text{NCH}_2\text{COO.HCl}$, is supplied in two grades, technical and purified, having the following average specifications:

	Technical	Purified
Purity (%)	95.5	99.0
NaCl (%)	2.0	0.1
Moisture (%)	2.5	0.5
Heavy metals (ppm)	20	20
Iron (ppm)	5	10

Compound appears as colorless, practically odorless crystals having an acid taste.

(Betaine hydrochloride is a product of Chemo Puro Manufacturing Corp., Dept. CP, 32-25 Queens Boulevard, Long Island City 1, N. Y. . . . or for more information reader may simply check CP 1538 on the convenient Reader Service slip located between pages 2 and 3.)

Scintillation grade p-terphenyl

Chemical, p-Terphenyl, scintillation grade, is used for liquid and plastic scintillation counting, particularly where higher energy radiations are involved. Available as colorless crystals having a melting point of 211-212°C, the compound has a maximum fluorescence of 3460Å.

(p-Terphenyl is a product of Arapahoe Chemicals, Inc., Dept. CP, 2800 Pearl St., Boulder, Colo. . . . or for more information reader may simply check CP 1539 on the convenient Reader Service slip located between pages 2 & 3.)

For more information on product at right, specify CP 1540 . . . see information request blank between pages 2 - 3.

Cyanamid's

ACRYLO-NEWS

No. 5 of a series
of advertisements

AERO* Acrylonitrile, a highly stable bi-functional chemical, is finding increasing use as a reactive intermediate. Its versatility is indicated by its use in the preparation of pharmaceuticals, insecticides, surface active agents, and many other useful products as well as by direct application in the broad fields of rubber,

plastics and textiles. Its polymers and copolymers can be formulated to add many desirable properties to today's products and to create interesting new products for the future. The following items and abstracts, gathered from many sources, indicate a few facets of current research with this versatile chemical.

☆☆☆☆

ACRYLONITRILE IS USEFUL AS AN INTERMEDIATE in its condensation with tetraethylene pentamine to increase molecule size. When the resulting beta alkyl amino propionitrile is added to aqueous nickel electroplating baths, its presence ensures bright, ductile and smooth deposits of metal.

ACRYLONITRILE CAN BE CONVERTED EASILY TO the ammonium or alkali metal salt of polyacrylic acid. There is an increasing production of polyacrylates due to their fine performance as latex thickeners and warp sizings. Recently it was learned that this composition is important as a stabilizing agent for edible ice cream. The stabilizing action of the polyacrylates in ice cream improves taste and texture, decreases the amount of ice crystals formed (graininess) and allows better controllability of the over-run.

CYCLIZED ACRYLONITRILE RUBBERS can be prepared in the presence of an acid-stable cationic surfactant, obviating the need for a solvent and facilitating recovery of the cyclized rubber. The product is suitable in adhesives, insulating materials, paints, lacquers and waterproof paper.

LUBRICITY IS AN IMPORTANT FACTOR in molding and extrusion operations. A tall oil ester derivative used to plasticize acrylonitrile-vinylidene chloride compositions facilitates movement of the resin over metal surfaces. Such a formulation also imparts anti-blocking properties which permit storage of calendered sheets without cohesion.

VERSATILE ACRYLONITRILE serves as a solvent for thermosetting alkyd resins which may be applied to electrical members such as coils. A durable coating is formed after curing.

(Some or all of the above items are covered by U.S. or foreign patents)

☆☆☆☆


Should you wish a more complete bibliography of current literature and new developments concerning acrylonitrile, we shall be glad to place your name on our mailing list.

As the pioneer producer of this exciting vinyl monomer, American Cyanamid has expanded its production facilities to assure users adequate supplies at low price. Write for technical assistance in your acrylonitrile research.

*Trade-mark

AMERICAN Cyanamid COMPANY
PETROCHEMICALS DEPARTMENT
30 Rockefeller Plaza, New York 20, N. Y.

Lubricating Greases of today demand a STEARIC ACID of Higher Purity!



HYDROFOL Fatty Acids 150

An excellent technical grade Stearic Acid for superior greases. Also for high quality, bulky zinc, calcium, and magnesium stearates and for powdered metals.

HYDROFOL FATTY ACIDS 150 contains 90% Stearic Acid. High melting point makes this product suitable for grinding into fine powder. Acids "150" will not darken, oxidize or deteriorate during normal processing.

SPECIFICATIONS

Titre °C	62 to 64
Acid Number	195 to 201
Iodine Value	3.0 Max.
Saponification Value	196 to 202
Color (5 1/4 inch Lovibond)	15Y/1.5R

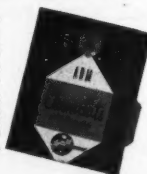
TYPICAL COMPOSITION

(Chain Length-Acids)

C ₁₆	10.0%
C ₁₈	90.0%
Unsaturated	3.2%
Saturated	96.8%

AVAILABLE TO RESEARCH DEPARTMENTS

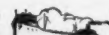
continuous Technical Information Service on latest developments in new ADM Chemifats. Furnished in handy file folder form for quick reference. A request on your letterhead will put your name on our Technical Information mailing list.



ACIDS • GLYCERIDES • SPERM OILS • ALCOHOLS
FROM VEGETABLE • ANIMAL • MARINE OILS and FATS

PRODUCED IN ANY QUANTITY

SAMPLES TO SHIPLOADS



ARCHER • DANIELS • MIDLAND COMPANY
Chemical Products Division • 2191 West 110th St. • Cleveland 2, Ohio

When inquiring check CP 1541 on handy form, pgs. 2-3

MATERIALS

Reduces buffing of nickel electroplate used under chrome plate . . .

addition agent produces a bright nickel plate

Uses: In electroplating of nickel prior to chrome plating. Material is especially useful in ductile-type plating.

Features: Chemical addition agent greatly reduces buffing of nickel plate prior to chrome plating. It can be used in both aqueous and non-aqueous nickel solutions.

Description: Dolcourin N.P. #1 (Tech.) was originally developed by manufacturer as a flavor replacement for Coumarin. Because of its high cataphoretic properties, the material was found to produce a bright nickel plate.

(Nickel plating aid is a product of Dodge & Olcott, Inc., Dept. CP, 180 Varick St., New York 14, N. Y. . . . or for more information check CP 1542 on handy form, pages 2 and 3.)

Offer pilot plant quantities of succinonitrile . . .

yields interesting series of unsaturated chlorinated nitriles

Uses: Interesting series of unsaturated chlorinated nitriles is yielded by liquid phase chlorination. Compound will undergo typical reactions of nitrile group and can be reduced in high yields to pyrrolidine.

Description: Succinonitrile, (CH₂CN)₂, is a pale yellow waxy solid of 99.7 mol per cent purity (water free). It is slightly soluble in water, benzene, and ethanol; soluble in acetone, chloroform, and dioxane. It has following average properties:

Sp gr (60°C)	0.985
Crystallization point (°C)	51
Refractive index (n _D ²⁰)	1.4147
Water content (% by wt)	0.55

Compound is highly stable, being held for 72 hours at 200°C without undergoing appreciable decomposition.

(Succinonitrile is available in developmental quantities from Organic Chemicals Div., Monsanto Chemical Co., Dept. CP, 1700 S. Second St., St. Louis 4, Mo. . . . or for more information check CP 1543 on handy form, pages 2 and 3.)

Catalogs laboratory chemicals

Fiftieth anniversary catalog lists manufacturer's line of laboratory reagents and chemicals. Specifications and prices are given in the digest-size 246-page book.

Catalog No. 54 is issued on letterhead request to J. T. Baker Chemical Co., Dept. CP, Phillipsburg, New Jersey.



Get more production from your present processing equipment. Increase capacity by eliminating space-wasting foam with Dow Corning silicone defoamers. Here are some typical examples:

- ✓ standard molasses processing load increased from 18 to 24 tons!
- ✓ yield on textile vat dyes doubled!
- ✓ in processing food, vacuum concentration capacity increased 60%!
- ✓ proposed \$2,000,000 expansion of processing plant made unnecessary by efficient foam control!

Dow Corning Antifoam A Compound and Antifoam AF Emulsion are the most versatile and economical defoamers on the market. Effective at remarkably low concentrations, they pay for themselves time and again in more complete use of process equipment and shorter processing time, and in the elimination of waste and fire hazards. Both defoamers are tasteless, odorless and physiologically harmless.

For more efficient foam control . . .

Use

DOW CORNING ANTIFOAM A

DOW CORNING ANTIFOAM AF EMULSION

send for FREE SAMPLE

Dow Corning Corporation, Dept. BB-20
Midland, Michigan

Please send me data and a free sample of

☐ Dow Corning Antifoam A
☐ Dow Corning Antifoam AF Emulsion

NAME _____

COMPANY _____

ADDRESS _____

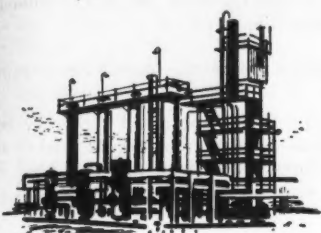
CITY _____ ZONE _____ STATE _____

When inquiring check 1544
on handy form, pgs. 2-3

CHEMICAL PROCESSING

problem

To meet ethylene consumer demand for a product that is essentially free of acetylene.



solution

GIRDLER developed catalysts to selectively hydrogenate the acetylene in the presence of the ethylene. Acetylene content was cut more than 99% giving consumers what they wanted:

Ethylene with less than 50ppm of Acetylene



Girdler will gladly help solve your catalyst problems.

FOR
Catalysts

WRITE...



The
GIRDLER
Company

A DIVISION OF
NATIONAL CYLINDER GAS COMPANY
Gas Processes Division
LOUISVILLE 1, KENTUCKY
NEW YORK • TULSA • SAN FRANCISCO

When inquiring check CP 1545
on handy form, pgs. 2-3

AUGUST, 1954

MATERIALS

Powdered hydroxyethyl cellulose with low salt content offered in commercial quantities

Uses: As a thickener, stabilizer, film former, dispersant, and binder in aqueous systems.

Features: Powdered hydroxyethyl cellulose with low salt content is commercially available.

Description: Material, called Cellosize, is a water-soluble, light-colored, free-flowing powder containing 90% hydroxyethyl cellulose. It is offered in three viscosities designated WP-09 (viscosity of 5% solution is about 100 cps @ 20°C), WP-3 (viscosity of 5% solution, 300 cps @ 20°C), and WP-300 (viscosity of 5% solution, 30,000 cps @ 20°C).

(Powdered hydroxyethyl cellulose is a product of Carbide and Carbon Chemicals Co., a div. of Union Carbide and Carbon Corp., Dept. CP, 30 E. 42nd St., New York 17, N.Y. . . . or for more information check CP 1546 on handy form, pages 2 and 3.)

After you've read an article, do you often . . .

Want More Information?

Ever read a magazine article and think — "Now there's something I'd like to know a little more about?"

Probably you have . . . because no matter how long the article, it can't tell you everything. But how do you get more information? Perhaps the magazine didn't tell you . . . and you're too busy to hunt here and there for a name and address . . . a source of further information. So — maybe a good, profitable idea is not followed up, not put into practice in your operations.

When you read **CHEMICAL PROCESSING** you come to no such "dead ends." Every article has been selected as worthy of your valuable reading time . . . the non-essentials have been edited out . . . brief, factual material remains . . . AND, at the end of every article a "source" paragraph tells you where to get more information.

Convenient for you . . . and **NOTHING MISSING**. Remember, the manufacturer's name and address along with a "key number" at the end of an article is there as an editorial service for you. (Did you wonder, "Is this a new form of advertising?") That information is added to each story by the editors to help you, the reader.

THE EDITORS

DURAMETALLIC PACKINGS

SAVE at the point of sealing . . .

Repacking time costs money! That's one reason why it pays to specify Durametallic self-lubricating, long-lasting packing for your specific sealing need.

Write today for File No. DMCP . . . it will be an important step toward securing the right packing for your particular equipment and sealing problem.

Durametallic Products are "Engineered For The Job"

DURAMETALLIC CORPORATION
KALAMAZOO MICHIGAN

When inquiring specify CP 1547 on handy form, pgs. 2-3

WILLIAMS
announces
new line of
natural iron
oxide pigments

very very fine

VVF

VVF pigments are produced by our unique grinding process to give a very, very, fine product controlled for top particle size and particle size distribution. VVF pigments will reduce your grinding and dispersing time in paints and allied products as much as 75%.

VVF pigments give you brighter mass color, stronger tint, increased hiding power, and

higher gloss than standard grind pigments. VVF pigments now available are—Raw and Burnt Siennas, Raw and Burnt Umbers, Metallic Browns, Red Iron Oxide, and Primer Pigments.

Your Williams representatives will gladly give you complete information on this new pigment group—or mail coupon for illustrated VVF TECH REPORT.

WILLIAMS
COLORS & PIGMENTS

"OUR 75th YEAR"

C. K. Williams & Co.

Easton, Pa.
East St. Louis, Ill.
Emeryville, Cal.

MAIL COUPON TODAY

C. K. WILLIAMS & CO., Easton, Pa., Dept. 28

Please send me VVF TECH REPORT giving physical and chemical specifications and list of suggested applications.

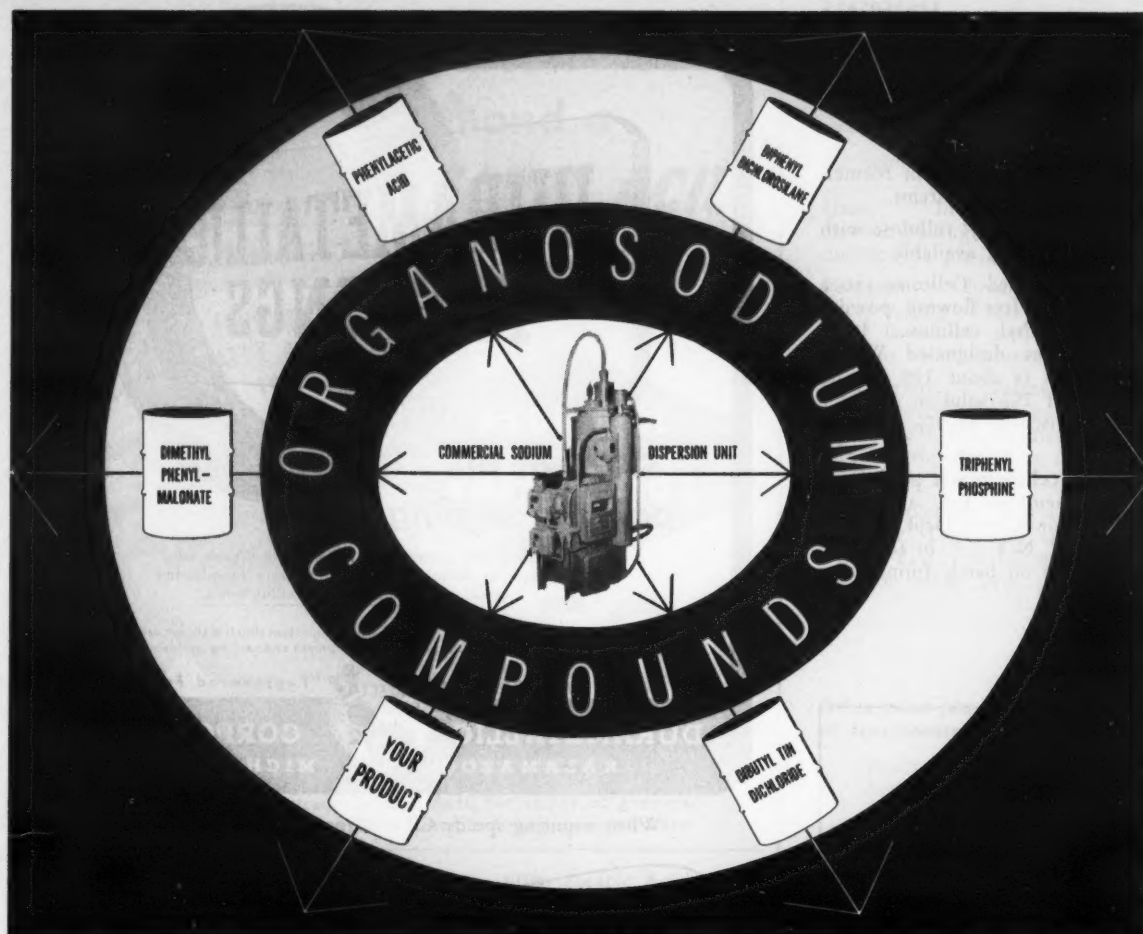
Name Title

Company

Address



When inquiring check CP 1548 on handy form, pgs. 2-3



Organosodium Compounds (R-Na) Open New Frontiers

Microscopic sodium particles dispersed in inert hydrocarbon media now make practical the production on a commercial scale of organosodium compounds such as phenylsodium and benzylsodium. These compounds are characterized by a direct carbon to sodium bond and are obtained by:

- 1) Replacement of a halogen

$$RCl + 2Na \longrightarrow RNa + NaCl$$
- 2) Substitution for an active hydrogen (metalation)

$$RCH_3 + R'Na \longrightarrow RCH_2Na + R'H$$

$$2RH + 2Na \text{ (Dispersion)} \longrightarrow RNa + H_2 \uparrow$$

(sometimes possible)
- 3) Addition to an activated double bond

$$R_2C = CR_2 + 2Na \longrightarrow \begin{matrix} R_2C - CR_2 \\ | \quad \quad | \\ Na \quad \quad Na \end{matrix}$$

As is illustrated above, organosodium compounds, such as phenylsodium, are useful tools in three types of syntheses:

- a) addition reactions

$$RNa + R_2C = O \longrightarrow R_3CONa$$
- b) metalation reactions

$$RNa + R'H \longrightarrow R'Na + RH$$
- c) Wurtz type reactions

$$RNa + R'Cl \longrightarrow R'R + NaCl$$

Technical literature contains numerous references to organosodium compounds as reaction tools, but only now are commercial applications possible through the development of sodium dispersions. Also, these dispersions may often be substituted in reactions where the literature references use alkoxides, sodamide, sodium hydride, potassium or lithium — and sodium is available in large scale quantities.

Consult with our technical sales staff if the manufacture and use of organosodium compounds interests YOU. Send for our technical booklet, "Sodium Dispersions."

U.S. INDUSTRIAL CHEMICALS CO.

Metallic Sodium is manufactured by
National Distillers Chemical Co.
at Ashtabula, Ohio and sold by:

Divisions of National Distillers Products Corporation
120 Broadway, New York 5, New York Branches in all principal cities.



MATERIALS

Fifty per cent lead in active form raises efficiency of leaded ZnO in paint formulations . . .

four pounds does the same job as five pounds of 35% leaded zinc oxide

Uses: As a white pigment for exterior paint formulations.

Features: Pigment gains increased efficiency because it contains a higher percentage of lead in an active or basic form. Less lead pigment need be used to obtain same amount of available lead in the paint.

Description: Co-fumed lead zinc oxide, known as Ozlo 18M, is composed of 82% ZnO and 18% monobasic lead sulfate (PbO·PbSO₄). Four pounds of the material may be used to replace five pounds of 35% leaded zinc oxide in a paint formulation while still retaining equal zinc oxide and equal effective lead content. If cost is maintained at the same level, amount of lead pigment can be greatly increased to improve paint performance.

(Leaded zinc oxide is a product of Pigment, Color and Chemical Div., The Sherwin-Williams Co., Dept. CP, 300 W. Lake St., Chicago 6, Illinois . . . or check CP 1550, pages 2 and 3.)

Dyes minimize shade changes when cotton or rayon fabrics are resin after-treated

Uses: In dyeing cotton or viscose rayon fabrics which are to be after-treated with melamine or urea-formaldehyde resin finishes.

Features: Shade change is minimized when material is later resin-treated. Dyes build up well into full shades, and retain lightfastness. Wash fastness is improved after resin treatment.

Description: Recent additions to manufacturer's dye line are two metallized azo dyes, Calcodur Resin Fast Gray 2G and Gray B. Both are level dyeing and have good solubility.

(Resin-fast dyes are a product of American Cyanamid Co., Dept. CP, 30 Rockefeller Plaza, New York 20, N. Y. Check CP 1551, pgs. 2 & 3.)

Life of polyethylene increased by use of carbon black

Reports of investigations on how carbon black will increase the life of exposed polyethylene up to 20 times are presented in two-page descriptive bibliography. Literature tells how black resists oxidizing effect of sunlight, and by confining this action to surface layer minimizes breakdown of resin.

Bul 100 is issued by Acheson Dispersed Pigments Co., Dept. CP, 2250 E. Ontario St., Philadelphia 34, Pa. Specify CP 1552, pages 2 and 3.

When inquiring check CP 1549 on handy form, pgs. 2-3

Bleaching nylon Type 670 with peracetic acid

How company's 40% peracetic acid can be used in a simple and satisfactory procedure for bleaching nylon Type 670 is described in bulletin. Bleach bath formula, make-up, and procedure for cold bleaching, jig bleaching, and knit goods bleaching, of nylon Type 670, as well as Type 200, are explained.

Bul 60 is available from Buffalo Electro-Chemical Co., Inc., Dept. CP, Station B, Buffalo 7, N.Y. Specify CP 1553, pages 2 and 3.

Supplement phenolic resins to make weather-resistant protective coatings . . .

vehicles are copolymers of oil-modified phenolic resins and silicone

Uses: For spar varnishes, maintenance paints, and specialty coatings where added resistance to heat, weathering, chemicals, and moisture is desired.

Features: Spar varnishes based on these resins show excellent color retention. Water and chemical resistance of films is better than comparable silicone alkyds. They can be baked to give excellent film properties in 400-500°F range. Soluble in mineral spirits, resins are compatible with alkyd and phenolic varnishes.

Description: Copolymers of silicone and oil-modified phenolic resins, XR-875 and XR-859 contain 25% and 50% silicone respectively. Spar varnishes based on XR-875 hold their color after 1000 hr in the Atlas Sunshine Weatherometer. Formulations containing XR-859 not only keep their color after 1000 hr, but also retain 90% of their original gloss. (Compare this to a 500 hour life for conventional varnishes.) Availability is limited to laboratory quantities at the present time.

(Protective coating vehicles are a development of Dow Corning Corp., Dept. CP, 592 Saginaw Rd., Midland, Mich. . . . or check CP 1554, pgs. 2&3.)

Materials important in manufacture of yellow benzidine pigments now produced in USA

Acetoacet-o-anisidide and acetoacet-m-xylylidide are now being produced in this country. Both of these intermediates are important in the manufacture of yellow benzidine pigments. Acetoacet-o-anisidide is used to make pigments with superior resistance to heat and chemicals for application in coloring rubber products. Pigments prepared from acetoacet-m-xylylidide have excellent light fastness and are used in printing inks and textile printing.

(Materials are products of Carbide and Carbon Chemicals Co., a div. of Union Carbide and Carbon Corp., Dept. CP, 30 E. 42nd St., New York 17, N. Y. . . . or check CP 1555, pages 2 and 3.)



Here's Aluminum Chloride

in the RIGHT SIZE for your use

Most often, a particular process using aluminum chloride, anhydrous, works best with a selected particle size.

We have taken technical liberties in this picture (exposing aluminum chloride to the air) to show you the four sizes available from Hooker.

Extra work of screening isn't necessary when you specify Hooker aluminum chloride. The four sizes give you a choice that will meet just about every process requirement:

1. *Extra fine grind* is unscreened, with

90 to 95% passing 40 mesh.

2. *Fine grind* is unscreened, practically all passing 20 mesh.

3. *Coarse grind* is unscreened, 1 mesh and finer. It contains 25 to 35% finer than 20 mesh.

4. *Coarse screened* is the same as coarse grind (No. 3), but is screened to remove 20 mesh and finer.

Before re-ordering your requirements, get the facts on Hooker aluminum chloride. For technical data,

just phone the nearest Hooker office listed below, or mail the coupon today.

Need other chlorides? This is only one of several metal chlorides available from Hooker. Chlorinated organics and inorganics are specialties with us; we've been making them for more than 30 years. If you need a special chlorine-containing compound in quantity, we may be able to produce it for you economically. To find out quickly, just phone the nearest Hooker office or write us today.

FOR FAST SERVICE, PHONE:

CHICAGO CEntral 6-1311
LOS ANGELES NEvada 6-3826
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From the Salt of the Earth

HOOKER ELECTROCHEMICAL COMPANY

NIAGARA FALLS • TACOMA • MONTAGUE, MICH. • NEW YORK • CHICAGO • LOS ANGELES

When inquiring check CP 1556 on handy form, pgs. 2-3

HOOKER ELECTROCHEMICAL COMPANY, 15 Forty-seventh St., Niagara Falls, N. Y.

Please send:

- ☐ Data sheet on Hooker aluminum chloride, anhydrous
☐ Bulletin 100 describing Hooker products and services

Name..... Title.....
Company..... Address.....
City..... Zone..... State.....

Hooker's hot lime zeolite system assures . . .

zero hardness feedwater

. . . protects boilers, accessories from corrosion and pitting

R. S. BRIGGS, Plant Engineer
Hooker Electrochemical Company
with **TED F. MEINHOLD**, Assistant Editor

Hooker Electrochemical Company, Niagara Falls, New York, is protecting its boilers and accessories against corrosion and pitting from feedwater by a hot lime-hot zeolite boiler water treating system. Having a design capacity of 70,000 gal treated water per hr, the system was installed last year because plant had outgrown hot lime soda system built in 1937. Old system could only handle 9650 gph. Source of water is the Niagara River, adjacent to plant.

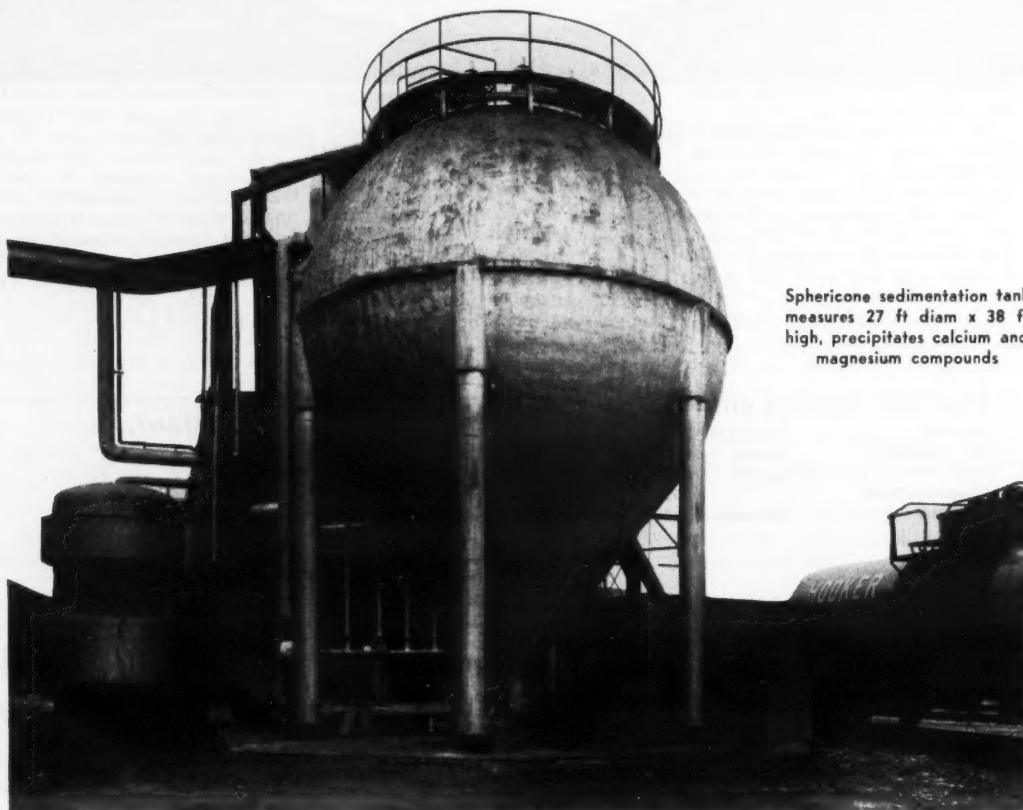
New system consists of a 27 ft diam x 38 ft high Graver Sphericone sedimentation tank, five 120

inch diam x 4 ft high Anthrafilt pressure filters, three 120 inch diam x 6 ft high zeolite water softeners, and a deaerating heater for reducing oxygen and carbon dioxide content.

Raw river water is heated and chemically treated in sedimentation tank. Calcium and magnesium compounds are precipitated by reacting with lime. Water is forced up through dense bed of sludge before it passes to filters. Sphericone, because of its increasing cross-sectional area, reduces velocity of water as it rises in the tank and results in optimum separation. Tank is desludged automatically at regular intervals.

Filters, using silica-free filtering medium, Anthrafilt, remove small quantities of precipitates carried over from sedimentation tank.

Hot zeolite softeners, containing Rohm and Haas Amberlite IR-120, reduce water hardness to zero.



Sphericone sedimentation tank measures 27 ft diam x 38 ft high, precipitates calcium and magnesium compounds



Resins are regenerated with brine solution.

Last step in operation is spray-tray deaerating heater. Consisting of a series of parallel weir-edge cubical stainless steel tray units arranged in tiers, each tray cube is designed to provide maximum linear footage of weir spillage edge. Water is boiled and scrubbed with fresh steam. Intimate contact of multiple thin films of water with steam produces deaerated feedwater having less than 0.005 ml/liter oxygen.

Final water has 27 ppm alkalinity, zero hardness, less than 1 ppm average silica content, pH of 10.2.

Treatment Costs with Hot Lime-Hot Zeolite System

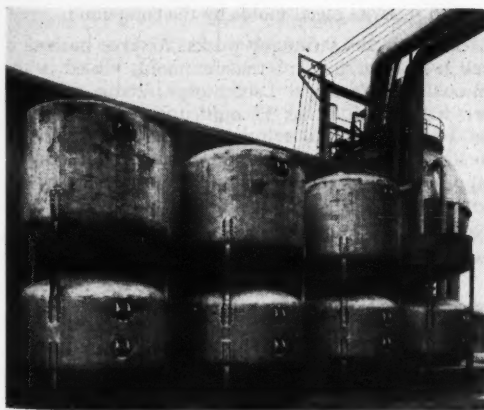
February 1954

Water treated: 363,365 gpd			
Hexametaphosphate	15 lb @ 14.7c/lb	\$ 2.205	
Lime	288 lb @ 5.0c/lb	14.400	
Brine for zeolite regeneration	488 lb @ 0.18c/lb	0.88	
			\$17.485

$$\text{Cost/1000 gal make-up water} = \frac{17.485}{363,365} = \$0.0481/1000 \text{ gal}$$



Control panel of water conditioning system



Hot zeolite softeners achieve zero hardness. Resins are regenerated with brine

Overall capacity of system is considerably beyond the company's present requirements and should be adequate for future requirements.

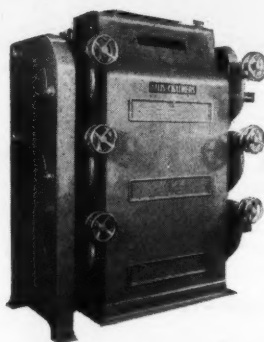
(Hot lime-hot zeolite boiler treating systems are product of Graver Water Conditioning Co., a division of Graver Tank and Manufacturing Company, Inc., Dept. CP, 216 West 14th Street, New York 11, New York . . . or for more information check CP 1557 on handy form, pages 2 and 3.)

ALLIS-CHALMERS Reduction and Separation Equipment



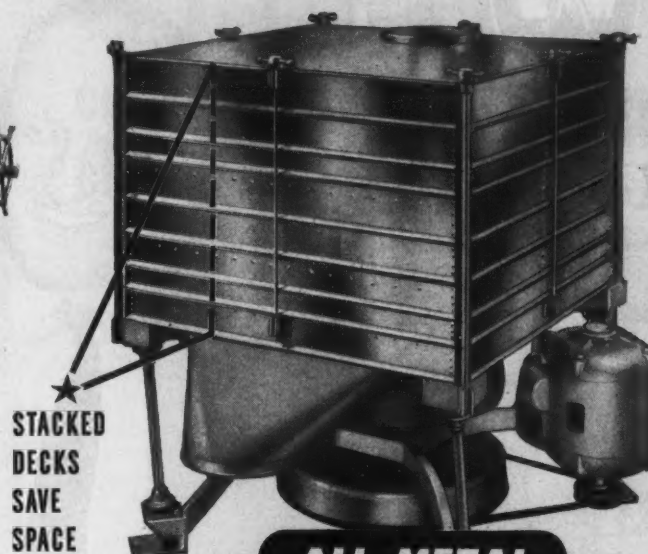
FLAKING MILL

By compacting mill feed into broad-surfaced flakes, the Allis-Chalmers flaking mill speeds your subsequent grinding operation *two to four times*. The principle is basic . . . flakes shatter much easier than other forms of material. A complete line of Allis-Chalmers flaking mills is available to meet any chemical industry requirement.



Style N ROLLER MILLS

In this Allis-Chalmers roller mill, three progressively finer grindings produce a maximum yield in a single pass. Each grinding is extremely gentle. There is no excessive shattering, no size destroying impact. Fines are kept to minimum. To meet varying requirements, Style N roller mills are also available in one pair high and two pair high types.



STACKED
DECKS
SAVE
SPACE

**ALL-METAL
CIRCLE
SIFTER**

35

**Square Feet of
Screening Area in NINE
Square Feet of Floor Space**

IF YOUR PLANT EXPANSION PROGRAM is running a losing race against increasing production, consider installing the compact, high-capacity *Circle* sifter. By utilizing stacked decks, this space-saving unit provides screening area equal to that of a single deck screen requiring *four times* the floor space.

Other advantages of the stacked deck design include flexible capacity, quick product changeover and positive method of tensioning screen. Three to seven metal or silk screens may be used to meet varying production needs. External tie-rods speed deck changing. Simplified dismantling and all-metal construction facilitate fast, thorough cleaning with air, water or brush.

Installation requires no structural modification. Dynamic balancing makes the *Circle* sifter's gyratory motion smooth and vibrationless. Contact your nearby A-C representative or write for Bulletin 06B7625A, Allis-Chalmers, Milwaukee 1, Wisconsin.

A-4215

Circle is an Allis-Chalmers trademark.

ALLIS-CHALMERS

Chemical Milling and Processing Equipment



When inquiring check CP 1558 on handy* form, pgs. 2-3



Dependable Source for Chemical Raw Materials



Harold R. Nelson, President, Michigan Bleach Corp., Detroit, Mich.

"We're building our bleach business on quality ingredients"

— Harold R. Nelson, President, Michigan Bleach Corp.

"We are one of the largest producers of concentrated sodium hypochlorite bleach in this area," says Harold R. Nelson, President, Michigan Bleach Corp., Detroit, Mich. "Our product is used principally for treating waste, bleaching of textiles, and some home bleach."

"We know that the life and stability of the finished bleach depend directly on the purity of the raw materials, and just as our customers count on us for this purity, we count on Wyandotte for especially pure Caustic

and Chlorine. We also depend on Wyandotte for technical service, special laboratory tests and data, and timely tips on the handling of chemicals."

Have you talked to the Wyandotte representative lately? Remember, behind your Wyandotte representative and the high-quality chemicals he sells is a corporation that owns its own salt wells and limestone quarries — one with complete manufacturing and research facilities conveniently located in the great and growing Middle West.

It may help you to discuss your present requirements, and future projects, with Wyandotte. Wyandotte Chemicals Corporation, Wyandotte, Mich. Offices in principal cities.



HEADQUARTERS FOR ALKALIES

Soda Ash • Caustic Soda • Bicarbonate of Soda • Chlorine
Calcium Carbonate • Calcium Chloride • Glycols • Synthetic
Detergents • Agricultural Insecticides • Soil Conditioners
Other Organic and Inorganic Chemicals

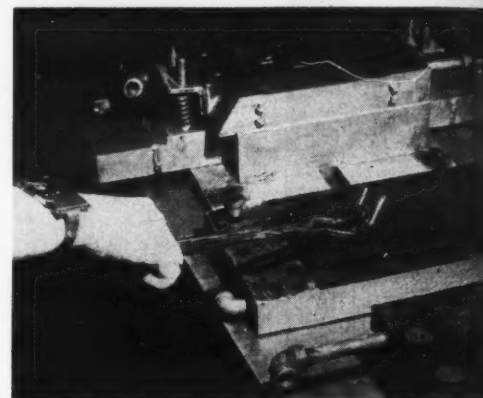
When inquiring* check CP 1559 on handy form, pgs. 2-3

IDEAS

Radioactive tracer techniques used to determine erosion in plastic molding . . .

after squeezing thru "hot" bushing, metal pickup of 1:20,000,000 by plastic can be measured

What is believed to be the first peacetime application of atomic energy to the plastics molding industry has been developed at the General Electric Company's Chemical Division laboratories in Pittsfield, Massachusetts. Used to develop a low-erosion phenolic



With long-handled tongs, radioactive sprue bushing is placed in transfer mold preparatory to testing erosiveness of a specific formulation

molding compound, the methods are able to detect and measure one part of metal in 20,000,000 parts of plastic, thereby determining amount of erosion caused in large metal molds by the compound.

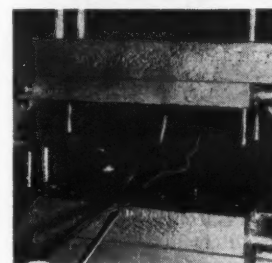
Here's how the technique works. A sprue bushing is taken from a standard transfer mold, placed in the Brookhaven National Laboratory's atomic pile, and irradiated until it has 37 millicuries of activity. Put in a lead box, it is returned to the company's laboratory. The "hot" bushing is replaced in the mold, appropriate precautions being taken due to its gamma emission.

Mold is then heated by high-pressure steam, and when at temperature, the preheated molding compound to be tested

is placed in the transfer pot. Pressure forces material through the irradiated sprue bushing and runners into the mold cavity. There the material is formed into a molded slug. After curing, mold is opened and slug removed.

After squeezing through bushing, cured formulation is taken out for counting

Slug contains infinitesimal particles of the sprue bushing which have worn off when the plastic was squeezed through. Plastic formulations containing varying



amounts of different materials will wear off different amounts of metal. "Hot" bushing can be used many times before discarding. To measure these amounts, and therefore evaluate the relative erosiveness of various formulations, the test slug is sent to company's general engineering laboratory at Schenectady, N.Y. There, measurement of gamma counts, made by scintillation counter, indicates the number



Molded test slug is in iron bell at right, gamma emission is determined by scintillation counter at left. Counts run for one minute, indicate erosiveness of formulation

of metal particles in the test slug. This is used as basis for determining abrasiveness of compound used to mold slug. (For description of low-erosion molding compound developed through this research, see page 27.)

As compounds having lower and lower erosion characteristics are developed, company finds that it may have to go to a more highly radioactive sprue bushing. Irradiation does not change the physical properties of the steel bushing other than to raise its Rockwell C hardness about 5 points. Company is also working on improved mold design to decrease erosion and therefore increase mold life.

(Information supplied by Chemical Division, General Electric Co., Dept. CP, Pittsfield, Mass.)

Polluted water is made pure by catalytic technique . . .

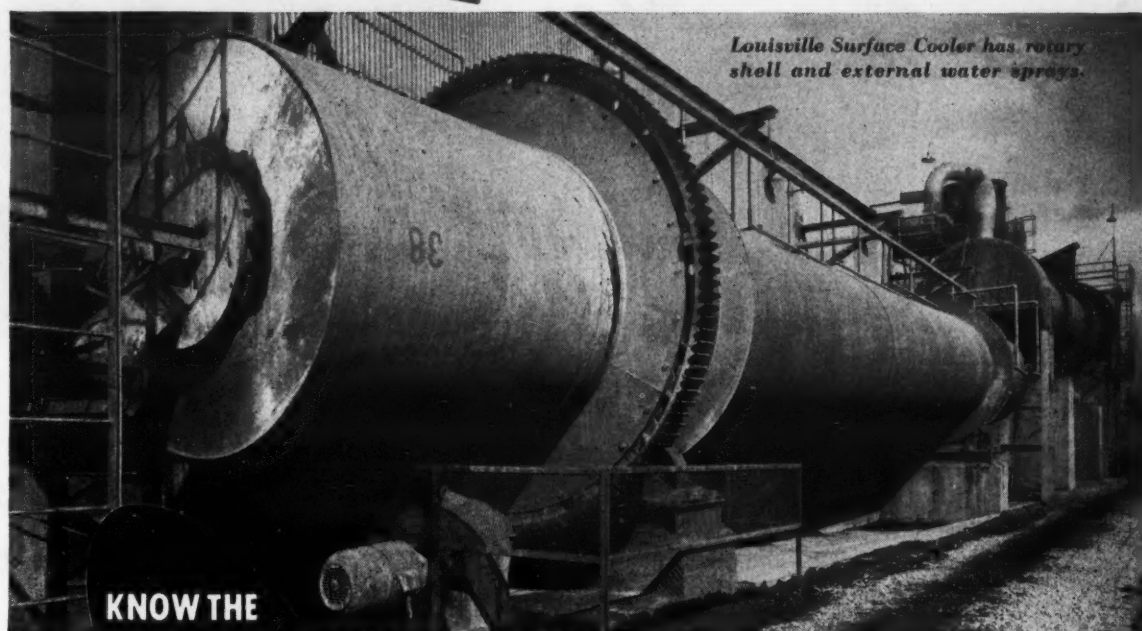
complex silver salts kill bacteria and eliminate bad odors and taste

Catalytic technique employing complex silver salts deposited on a common carrier material has been recently developed for water purification. Method effectively kills bacteria and eliminates bad odors and taste. Silver concentration in treated water is far below the maximum safe limit specified by U. S. Public Health Service for water used for human consumption.

(Hyla Process water purifier is a product of Salem-Brosius, Inc., Dept. CP, 248 Fourth Ave., Pittsburgh 22, Pa. . . or check CP 1560, pages 2 and 3.)



Louisville Cooler does satisfactory job at low cost for nationally known chemical manufacturer . . .



Louisville Surface Cooler has rotary shell and external water sprays.

KNOW THE RESULTS
before you buy!

. . . cooling lumpy calcined material from 1800° Fahr. to 150° Fahr. for further processing. Gentle mechanical handling required to minimize decrepitation.

Each Louisville cooler is "job-fitted" to your special problem—to make your cooling operations effective—to assure dependability of performance that will make the cooler operation pay.

Call in a Louisville engineer for a complete cooling survey. Based on his experience he will recommend one of the three standard Louisville types, a modification, or an entirely new design. The performance will be pre-determined. You'll know the results before you buy . . . and the results must be better! Write for complete information today.

3 types of Louisville Coolers

- Surface Cooler
- Water Tube Cooler
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Other General American Equipment:

Turbo-Mixers, Evaporators, Dryers, Dewaterers, Towers, Tanks, Filters, Pressure Vessels



Louisville Drying Machinery Unit

Over 50 years of creative drying engineering

GENERAL AMERICAN TRANSPORTATION CORPORATION

Dryer Sales Office: Hoffman Bldg., 139 So. Fourth Street, Louisville 2, Kentucky

General Offices: 135 South La Salle Street, Chicago 90, Illinois

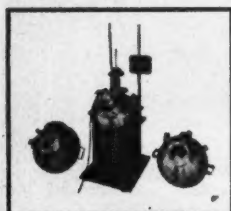
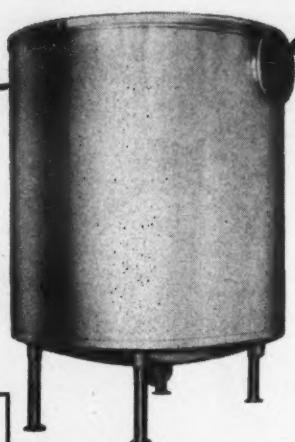
Offices in all principal cities

In Canada: Canadian Locomotive Company, Ltd., Kingston, Ontario

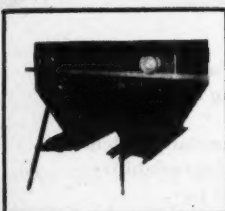
When inquiring check CP 1561 on handy form, pgs. 2-3

METAL EQUIPMENT for CHEMICAL PROCESSING Custom Made by GLASCO

Jacketed stainless
steel storage
tanks.



Special laboratory stills.



Overhead hoppers.

Many of the country's great Chemical, Pharmaceutical, Soap, Rubber, Plastics, and other industrial concerns come to Glasco for the fabrication of metal processing equipment because:

- GLASCO works constantly in stainless steel, monel, and other non-corrosive metals.

- GLASCO engineers and fabricators not only work to customer's blue prints or specifications, but also offer a complete design and engineering service.

- The range of GLASCO products includes every type of equipment, from standard trays and trucks to the largest and most intricate units; also special equipment in which heat transfer or pressure are concerned.

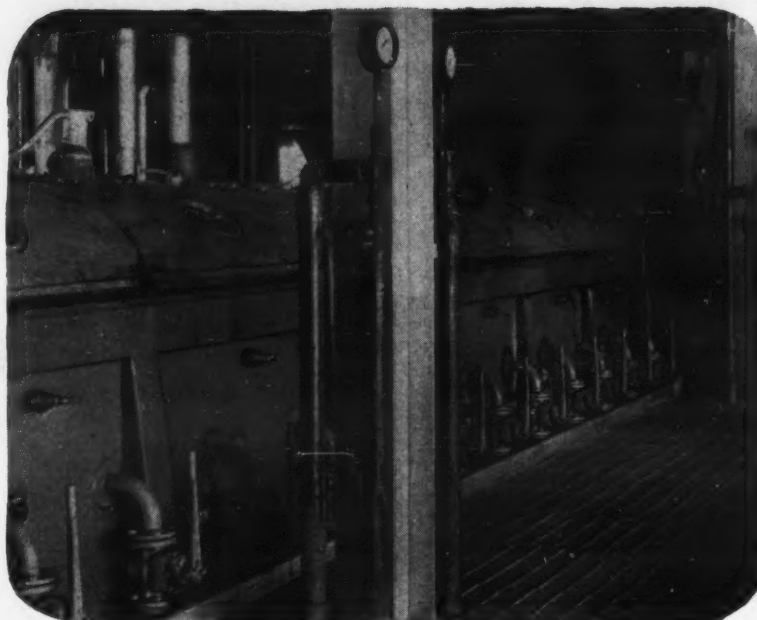
- GLASCO meets all ASME requirements.

Write for free folder "Metal Equipment for Processing of Chemicals and Pharmaceuticals".

GLASCO EQUIPMENT CORP.	
Pioneers Fabricators of Stainless Steel Equipment	
10 WAIT STREET	PATERSON 4, N. J.
<p>Phil. Area: Marple Organisation 1200 Commercial Trust Bldg. Philadelphia 2, Pa.</p> <p>South: Henry H. Hersey Co., 44 Norwood Place, Greenville, So. Car. New England: Morris & Underhill, 446 Statler Bldg., Boston, Mass.</p>	<p>New York State: Sanders Industrial Equip. Co. 1251 Broadway Albany 4, N. Y.</p>

When inquiring check CP 1562 on handy form, pgs. 2-3

ideas



De Smet solvent extractor,
looking toward end where
flakes enter

Cargill starts operating second US installation of Belgian extraction process on flaxseed

**First US installation of horizontal belt
extractor proved itself on copra at
San Francisco Cargill plant**

Second US installation of the Belgian De Smet process for solvent extraction of oil from seeds started operation in November 1953 at the new Vegetable Oil Division plant of Cargill, Incorporated, in Minneapolis, Minn. First installation, at another Cargill plant in San Francisco, has been operating since September 1952 on copra, and success of that plant had much to do with choice of De Smet for the midwestern plant.

The Minneapolis job is using flaxseed, but quite conceivably might be used for other seeds. Mild operating temperatures, electronic control, and tight quality standards assure high-grade, light-colored oil. Costs will be lower, say company engineers. Capacity of plant is about 20,000 bushels per day. About 420,000 lb of linseed oil and 400 tons of meal are produced in a day. Versatility with respect to seed types was the main advantage observed for the De Smet process when it was announced in this country in 1952 (CHEMICAL PROCESSING, November 1952, pp 6-7 and 16-17).

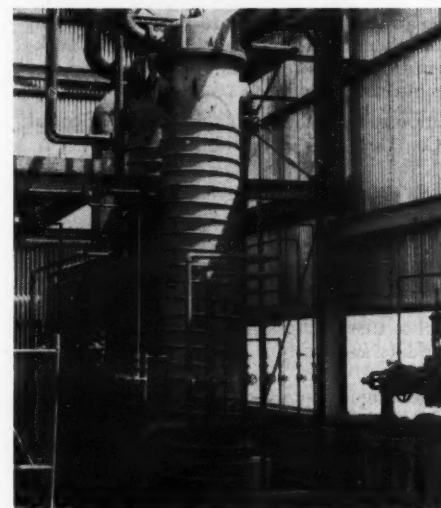
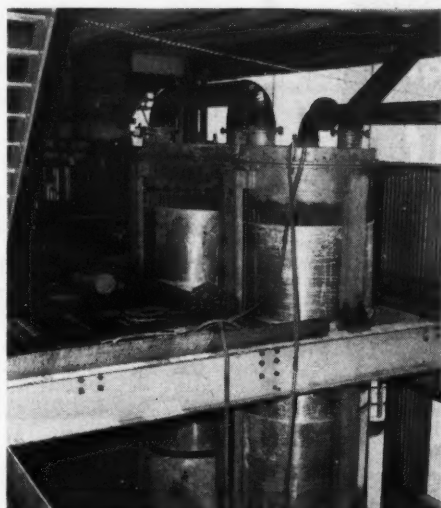


Photo taken during construction shows (foreground) steam strippers which remove the last traces of solvent from the extracted linseed oil. They receive oil from falling-film evaporators which are directly behind them in picture. Note steam coil around running plant this was covered with insulation before running plant

Fines present no problem even when using seeds which tend to break up or slime, since the extractor's seed bed itself acts as a filter cake. Bed thickness, conveyor speed and, at each extraction step, the flow of miscella can be regulated.

In Minneapolis, part of the oil is extracted mechanically by expellers before the solvent treatment. From the pre-expeller, the seed goes through customary cake breaker and then passes on a conveyor belt to building across the street which houses solvent extraction plant. Here, it is fed to the 65 foot long by 13 foot wide extractor to a bed depth of about 48 inches. It takes the cake about 3 hours to move through unit.

Extractor consists essentially of a continuous conveyor composed of a series of articulated frames of monel wire cloth backed up by perforated metal,



Vertical surface condensers are used in cooling water for barometric condensers on evaporators (photo taken while plant was under construction)

upon which flakes travel through unit and over a series of hoppers as they are sprayed with solvent (in this case hexane). Pumps recirculate solvent from each hopper (stage) up to spray heads above the belt at that stage. Solvent flows from one end of unit to the other, counter-current to cake travel, by overflow from one hopper to another. Thus, cake entering is first hit by oil-laden solvent while cake close to leaving is hit with fresh solvent from recovery system.

Extractor cover can be removed by overhead crane when extractor interior must be reached. Leakage of fumes is prevented by a water seal between cover and body. The Cargill extractor has 10 stages.

Spent flakes go through a French desolventizer-toaster and then a Blaw-Knox rotary cooler. Vapors and fumes from desolventizer-toaster pass through a cyclone collector in which a water-spray takes out meal fines and partially cools fumes. Bottom discharge from cyclone is discarded. Fumes and

(Continued on page 50)

The full pipe area of A.C.F. Cylindrical Plug Valves guarantees smooth flow of viscous lading, such as found in this **ROOFING ASPHALT PLANT**. Since the Valve has equivalent area to the pipe, there is no retarding of the free flow of material.

A.C.F. Valves stop erosion from solids in suspension in **INDUSTRIAL PROCESSING**. This company has purchased A.C.F. Valves since 1937.

PROOF OF DEPENDABILITY

The knife-edge action of the A.C.F. Cylindrical Plug easily shears obstructions found in **SEWAGE TREATMENT PLANTS**. This action clears stoppages... allows for steady flow.

Because of their quick quarter-turn shut-off, A.C.F. Cylindrical Plug Valves are important in **NATURAL GAS INSTALLATIONS**. This allows immediate control of flow. Now **TEFLON® GASKETS** provide even greater dependability against head leakage. *TEFLON IS A DUPONT PRODUCT

ACF

Representatives in 50 Principal Cities



PLUG VALVES

Write for descriptive Catalog 4-CP to ACF Industries, Incorporated, Valve Division, 1501 E. Ferry Avenue, Detroit 11, Michigan.

When inquiring check CP 1563 on handy form, pgs. 2-3

Covers scale design and construction

Most significant material published on scale construction and design over past 22 years is combined in one book. Publication should be valuable addition to any library and will also benefit industrial scale users and engineers who desire basic understanding on subject.

To obtain "Pivots and Bearings" remit \$5.00 (non-members) or \$2.50 (members) direct to O. H. Watson, Member of the Executive Committee, National Scale Men's Association, Dept. CP, 608 South Dearborn Street, Chicago 5, Illinois.

Carbon size selection easy with sample kit

Containing samples of six popular mesh sizes, a selector kit has been developed to aid in choosing the right grade activated carbon for industrial or commercial use. Plastic vials hold enough carbon for adequate size selection and visual comparison of physical properties. Mesh sizes range from $\frac{1}{4}$ " to finely divided powder.

(Kit is product of Barnebey-Cheney Company, Dept. CP, Cassady at 8th Avenue, Columbus 19, Ohio . . . or for more information check CP 1564 on handy form, pages two and three.)

Phenol content cut to 0.005% by waste treatment . . .

system handles 200,000 gpd, removes 99% of phenol

Built as an addition to Koppers' Follansbee, W. Va., tar products plant, a half-million dollar unit removes 99% of phenol contained in the waste water before it is emptied into the Ohio River. Phenol content of treated water is 0.005%.

Before unit was built, waste water contained up to 0.3% tar acids. Although harmless to human beings, it imparted an unpleasant taste to water treated for use in city mains.

Pilot plant was run experimentally prior to building of full scale unit.

there is a *Farris*

**safety-relief valve
for every
application**

Modern design.... Accepted
for dependability... Certified Safe
REALISTICALLY PRICED!

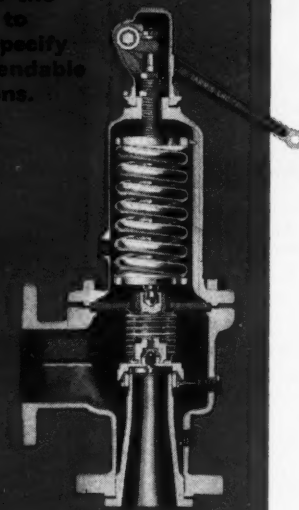
The swing is to Farris... whether the service is for liquid or gas, the only way to insure 100% safety all the time is to specify Farris. The world standard for safe, dependable service under all operating conditions.

Eliminate all risk of failure... the famous "FarrisSeal" and "Bal-Seal" Bellows, designed to overcome sticking and faulty valve operation, is engineering proof of the most advanced valve technology.

"Hanging" of moving parts is prevented because the bellows seals off the stem, guide and spring... protecting them from the corrosive action of the boiling fluid. Regardless of back pressure, the effects of surges or static condition are reduced or eliminated, allowing the valve to blow at the set point.

Bellows available in 316 Stainless or Monel, Kri-K coated if required.

Ask for additional data on this revolutionary, exclusive line of shielded valves.



Farris

ENGINEERING
CORPORATION



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Affiliates: Farris Flexible Valve Corp. — Farris Sticon Corp.
Farris HydroTee Corp. — Farris HydroSeal Corp. — Farris Pickering Governor Co.

Pat. and Patents Pending

FULL-NOZZLE

Sizes 1" D $1\frac{1}{2}$ ", to 8" T 10"

SEMI-NOZZLE

Sizes $1\frac{1}{2}$ " F 2", to 6" S 8"

**BAR STOCK &
HI-PRESSURE**

Type 2745— $\frac{1}{2}$ ", $\frac{3}{4}$ ", 1"
Type 2740— $\frac{1}{2}$ " x 1", $\frac{3}{4}$ " x 1",
1" x 1", 1" x $1\frac{1}{2}$ "
Type 1430— $1\frac{1}{4}$ ", $1\frac{1}{2}$ ", 2"

**CORROSION
TYPES**

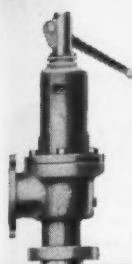
Type 1000— $\frac{1}{2}$ " to 2"
Type 3725— $\frac{1}{2}$ " to 1"
Type 3775— $1\frac{1}{2}$ " to 2"

**GENERAL
SERVICES**

Sizes $\frac{1}{2}$ " to 6" x 8"

REPRESENTATIVE
U. S. AND CANADA

TYPE 2680



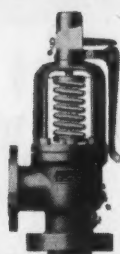
Made in Series 30, 60, 90 and 150 inlet flanges, R.F. and R.T.J. Series 15 outlet standard. Available with "FarriSeal" or "BalanSeal" bellows—with or without internal heat exchanger coil, stainless steel, Monel and Hastelloy trim. Plain or packed cap, and open lever types.

TYPE 2610



Made in Series 15 and 30 inlet flanges. Series 15 outlet standard. Parts interchangeable with heavy series valves. Full capacity, economical, for medium pressure range.

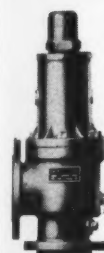
TYPES 2575 to 2578—
Series A, B, C



A.S.M.E.—N.B. Steam Generator Safety Valve. Complies with A.S.M.E. Code for fired pressure vessels. The suffix A indicates maximum temperature of 650°. B indicates 750°, using alloy spring; C indicates 900°, using alloy spring and carbon-moly. body. Pressure limits: 2575—300# 2576—450# 2577—600# 2578—900#

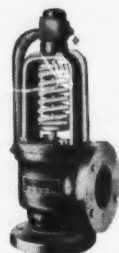
These valves are famous for their non-sticking qualities. Available in oversize orifices for greater capacity at slight additional charge.

TYPE 2550



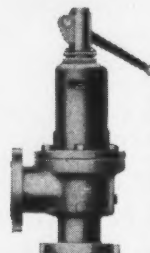
Made in Series 250 inlet, 125 outlet. Female outlet size available up to 4". Iron body, bronze or stainless steel trim. (Bronze trim has stainless steel disc as standard.) Stainless steel trimmed valves available with "FarriSeal" or "BalanSeal" bellows, with or without internal heat exchanger coil. Capacity advantages of full nozzle design

TYPE 2250



A.S.M.E.—N.B. Exposed Spring Boiler Safety Valve. 250# inlet, 125# female outlet to 4". Pressure and temperature limits 250# at 450°F. Available in stainless steel or bronze trim. Stainless disc on bronze trim, standard.

TYPES 2570 & 2550 - OL



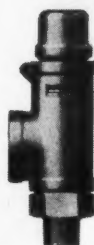
Made in Series 250 inlet, 125 outlet. Female outlet size available up to 4". Iron body, bronze or stainless steel trim. (Bronze trim has stainless steel disc as standard.) Stainless steel trimmed valves available with "FarriSeal" or "BalanSeal" bellows, with or without internal heat exchanger coil. Capacity advantages of full nozzle design. Type 2550 - OL—Open Lever Construction; Type 2570—Packed Cap and Lever Construction.

TYPE 2745



Sizes 1/2", 3/4" orifice No. 8 (area .019), No. 13 (area .077), 1" orifice No. 12 (area .045), No. 20 (area .250). By far the most outstanding advance in Safety Valve achievement. Nozzle capacity, blow down ring control, self aligning loose disc construction. Made from forged bar stock in four materials: brass, 304 and 316 stainless steel and cold rolled steel. Internal trim, 316 stainless steel. Both pipe connections in body for economical maintenance suitable for pressures to 10,000# on air, gas, oil and water. Type 2747—Packed Cap and Lever Construction.

TYPE 2740



1/2" x 1", 3/4" x 1" with .049 area, 1" x 1" and 1" x 1 1/2" with .18 area. A rugged, simplified design, limited capacity Safety-Relief Valve. Used by refineries particularly where extreme accuracy of blow-down is not essential. Uses: thermal reliefs, pump by-passes, etc.

TYPE 1430



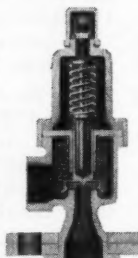
Sizes 1 1/4", 1 1/2", 2" female inlet and outlet. Heavy duty Safety-Relief Valve, cast steel body, stainless steel trim, with flat seat and disc and blow-down ring for pressures up to 600#. Both pipe connections in body for economical maintenance. For gas or liquid service.

TYPE 1000



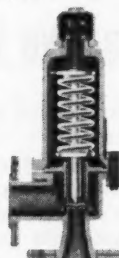
Diaphragm Control Relief Valve, sizes 1/2" to 2" male inlet, female outlet on bronze, 15 series inlet, 15 series outlet on Hastelloy "C" and type 316 stainless steel. Sensitive control with minimum bleed down. For chemical vapor-tight service—liquid or gas. Available with rubber, Neoprene, or molded Kel-F diaphragm and disc.

TYPE 3725



1/2" and 3/4" orifice No. 13 (area .077), 1" orifice No. 20 (area .25). Made in female connections or Series 15, 30 or 60 flanges inlet. With rubber, Neoprene, or stainless steel "FarriSeal" bellows, Hastelloy "C" or 316 stainless steel body and disc. For highly corrosive acid services within the scope of 316 stainless steel and Hastelloy "C".

TYPE 3775



Sizes 1 1/2" to 2", H orifice (area .785). Series 15, 30 or 60 inlet. Series 15 outlet. Rubber, Neoprene or 316 stainless steel "FarriSeal" bellows. Hastelloy "C" or 316 stainless steel body and disc. For highly corrosive acid services within the scope of 316 stainless steel and Hastelloy "C".

TYPE 1808



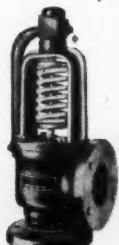
Sizes 1/2" to 2 1/2". All Bronze Portable Pop Safety Valve. Male inlet, female outlet. A.S.M.E.—N.B. for steam or air services. Precise operation, economical first cost. Pressure to 250# steam.

TYPE 1400



Sizes 1/2" to 2 1/2". Low Pressure Liquid Relief Valve, all bronze. Compact, adjustable range. Can be inspected and serviced without breaking pipe connection. Pressures to 250#.

TYPE 2350



Sizes 1 1/2" x 2" to 6" x 8". Wing guided construction cast iron body, bronze trim. A.S.M.E.—N.B. Boiler Safety Valve, exposed spring, test lever. 250# inlet, 125# or female outlet to 4"

TYPE 2469



Sizes 1 1/2" x 2" to 6" x 8". Wing guided construction, enclosed spring, test lever. A.S.M.E.—N.B. Cast iron body, bronze trim, 250# inlet, 125# or female outlet to 4"

Special fortified oil extracts phenol from water. Phenol is later recovered from oil by using caustic soda. Operating cost is \$30,000 annually, but this may be partially offset by the sale of the recovered product.

(Information on unit for treatment of waste water is supplied through the courtesy of Koppers Company, Incorporated, Department CP, Koppers Building, Pittsburgh 19, Pennsylvania.)

Low-temp process
for making large
refractory . . .

produces magnesia bricks weighing several hundred pounds

Virtually pure crystalline refractory in large industrial shapes is now being produced commercially. Previously, shapes larger than laboratory ware could not be made economically because of high temperatures involved. Present process uses much lower temperatures and can make furnace linings and bricks weighing as much as several hundred pounds.

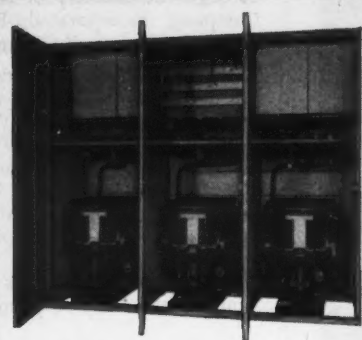
The magnesia refractory is approximately 97% pure and can be used at temperatures up to 3600°F. Nearly all impurities are inert, being imprisoned in the crystal structure. Product is more spall-resistant than non-crystalline magnesia refractories and is less likely to contaminate materials being processed.

Applications foreseen for the low-temperature process include processing of molten salts and lime, manufacture of calcium carbide, smelting and purifying lead, and in processing basic slags or metals.

(Low-temperature process for producing large refractories is development of Electro Refractories & Abrasives Corporation, Department CP, 344 Delaware Avenue, Buffalo, New York.)

For more information on product at left, specify CP 1565 . . . see information request blank between pages 2 and 3.

"Starting Line-up"



Rear view of HALC Controller Line-up. Bus covers provide maximum protection for personnel and equipment. Starters may be equipped with either oil-immersed or air-break contactors . . . installed in the same space. All components are readily accessible for maintenance.

ALLIS-CHALMERS Type H Starters

FOR 2300 TO 5000
VOLT MOTORS

FACTORY ASSEMBLED CONTROL GROUPS ARE

► Easy to Install ► Simple to Expand ► Attractive in Appearance

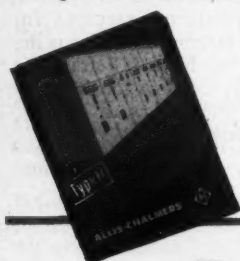
The factory assembled line-up of Type H Starters affords the many advantages of centralized high voltage control for an entire department or plant. One attractive, space-saving group takes the place of many separate cabinets and components. Planning and purchasing are simplified. Installation is quick and easy — only one incoming power feeder required. Internal bus and convenient wiring pro-

visions plus standardization of cubicle size facilitate the addition of starters.

Allis-Chalmers Type H Starters may also be used singly. Each starter is a complete control unit. Contactors, protective devices, meters, relays . . . all the coordinated components necessary for maximum protection of man, motor and machine are engineered into each starter.

A-4217

New Bulletin — Type H Starters are built in a wide range of ratings for squirrel-cage, wound-rotor and synchronous motors . . . for full or reduced voltage . . . reversing or non-reversing . . . with plugging, dynamic braking and multi-speed features. New bulletin 14B6410B tells the complete story. See your nearby A-C representative or write Allis-Chalmers, Milwaukee 1, Wisconsin.



ALLIS-CHALMERS



When inquiring check CP 1566 on handy form, pgs. 2-3

IDEAS

(Continued from page 47)

vapors leaving the top are condensed, and solvent is recovered by decantation.

Miscella is given a brine wash to remove fines. After that, it is pumped to one of two falling-film evaporators and then to one of two steam strippers. All of these towers are wrapped with steam coils under their insulation. Solvent vapor leaving evaporators is cooled and condensed in barometric condensers. Solvent and water are separated by decantation. Solvent is returned to the process, and water is cooled by exchange with cold water in vertical surface condensers having brass tubes and stainless shells. Cooling water is recycled through a cooling tower behind building.

Vacuum is maintained in the strippers by steam-jet ejectors. Exhaust from ejectors is put into an evaporator overhead line before it joins barometric condenser.

Linseed oil is further refined and sold. Biggest market is coatings.

(Extraction and oil recovery systems were developed by Extraction Continue De Smet, S.A., 38, avenue de France, Antwerp, Belgium. Sales agent in the United States and Canada is Stockdale Engineering, Dept. CP, 2300 Westmoreland St., Philadelphia 40, Pa. . . or for more information check CP 1567 on handy form, pages 2 and 3.)

Du Pont tells how it protects the public's health

How E. I. du Pont de Nemours and Company fulfills its responsibility toward the public health is told in 32-page illustrated booklet. Highlights include program of industrial medicine, protection of people in manufacturing operations, use and transportation of chemicals.

Basing its activities on the proposition that injury and illness must be stopped before starting, the company's staff of 166 doctors, 274 nurses, and 102 scientists and technicians operating in this field has as its ultimate goal "a safer, healthier US industrial society".

Booklet focuses on starting point for much of program, the Haskell Laboratory for Toxicology and Industrial Medicine, a unit of the company's medical division. Toxicological studies made on nylon are cited as an example of exhaustive tests each new product must pass before it is marketed.

Brief health histories of ten employees working in hazardous areas are presented. Processes in these areas are, for the most part, regulated by remote, automatic controls.

To indicate manifold aspects of public protection program, booklet pictures 74 different chemical containers, each specially designed for safety.

"Protecting the Public Health" is issued by Public Relations Department, E. I. du Pont de Nemours and Company, Inc., Dept. CP, Wilmington 98, Delaware.

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Remember the trade marks "tt"
and "TUBE-TURN" are applicable only
to products of Tube Turns,

**Engineered
for
tough service**

TUBE-TURN CONCENTRIC REDUCERS provide a gentle transition from large to small diameters with strong knuckle contours. They exceed the pipe itself in bursting strength and have fatigue strength equal to that of the joining butt weld.

This extra quality at no extra cost is typical of the entire Tube Turns' line. You can specify TUBE-TURN Welding Fittings and Flanges and *know* that you will get the *exact* answer to your specific piping problem. This leading line includes more than 4000 items in all piping materials, schedules and sizes to match *your* design . . . available promptly through your nearby Tube Turns' Distributor.

The Leading Manufacturer of Welding Fittings and Flanges

TUBE TURNS LOUISVILLE 1,
KENTUCKY

A Division of National Cylinder Gas Company

DISTRICT OFFICES. New York • Philadelphia • Pittsburgh • Cleveland • Chicago • Denver • Los Angeles
San Francisco • Seattle • Atlanta • Tulsa • Houston • Dallas • Midland, Texas



YOUR PIPING PROBLEM?

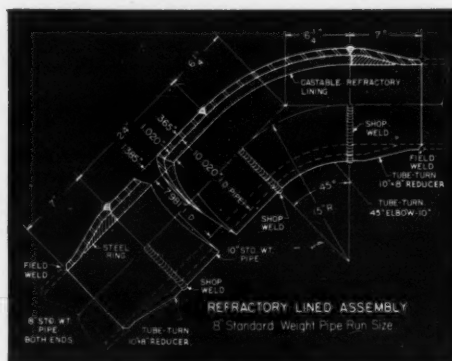
Here's service to help you...

TUBE TURNS' Engineering Service Division is staffed with men of wide experience to help solve your piping problems. Typical of many they encounter is this:

The general practice in handling highly abrasive materials in piping is to use heavy wall carbon steel elbows for directional changes, and replace these as they wear out. Recently, a new pipe lining . . . a zirconia-corundum refractory . . . was introduced with exceptional wear-resistant properties. This offers a highly satisfactory solution to the abrasion problem. The sketch shows how this lining can be applied to a 45° elbow by combining with two reducers.

This application is practical for piping of 4" through 12" diameter. Minimum thickness for casting of refractory is about one inch. It should be confined to mild pressure-temperature conditions. Additional details are available from Tube Turns' Engineering Service Division.

Design of 45° directional change with refractory-lined elbow.



YOUR DATA . . . Tube Turns has compiled data on many phases of piping application. For example: This booklet on "the why and where" of stainless steel piping is yours for the asking. Just mail the coupon.



TUBE TURNS, Dept. KK-4

224 East Broadway, Louisville 1, Kentucky

Please send free copy of booklet on Stainless Steel Piping.

Company Name _____

Company Address _____

City _____ Zone _____ State _____

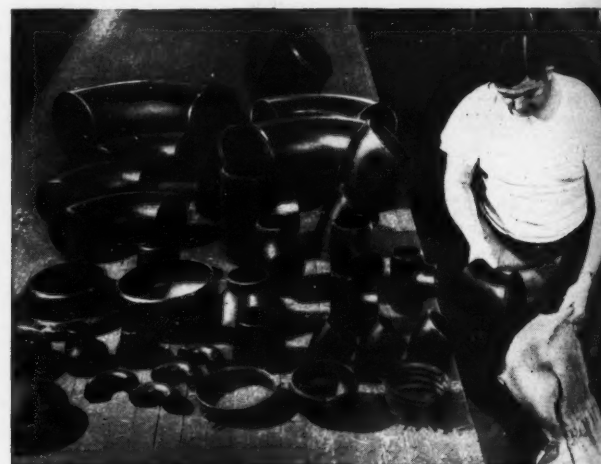
Your Name _____

Position _____



YOUR SIZE:

These ½-inch and 42-inch TUBE-TURN Welding Elbows are the extremes in the range of diameters available out of stock in carbon steel. Tube Turns' complete line of more than 4000 items includes fittings and flanges in carbon steels, stainless steels, chrome-moly steels, copper, aluminum, brass, monel metal, nickel and wrought iron.



YOUR SOURCE: The nearby Tube Turns' Distributor provides prompt delivery of TUBE-TURN Welding Fittings and Flanges to meet your needs exactly. He acts as your warehouse. He cuts your purchasing red-tape and time. He is backed up by the entire Tube Turns' organization.



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New York	San Francisco
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"TT" and "TUBE-TURN" Reg. U.S. Pat. Off.

TUBE TURNS

A DIVISION OF NATIONAL CYLINDER GAS COMPANY
LOUISVILLE 1, KENTUCKY

Vacuum as high as one billionth of an atmosphere produced by ionic pump . . .

experimental unit may simplify exhaustion of radio and other vacuum tubes

Experimental air pump with no moving parts can produce vacuum as high as one billionth of normal atmospheric pressure, similar to that in X-ray tubes and TV picture tubes. Ionic pump may simplify exhaustion of radio and other vacuum tubes, and might even be permanently attached to tubes in which vacuum must be maintained.

One form of the pump consists of a circular stainless steel box with carbon plates along the sides. Box is about two inches in diameter and an inch thick. Pump is supported between poles of a powerful permanent magnet and is connected by means of a tube to vessel from which gas is to be exhausted. After rough exhaustion with ordinary mechanical pump, valve is opened to connect ionic pump with vessel, and current turned on.

Electrons are attracted toward a tungsten ring located inside of box and connected to positive-charged side of high-voltage circuit supplying pump. Metal walls of box are connected to negative side of circuit. Magnetic field causes electrons to oscillate around the ring, where they come in contact with the gas atoms and ionize them. The positive-charged ions are attracted toward the negative-charged walls and driven into carbon plates, thereby reducing the gas pressure.

Many cubic centimeters of gas can be absorbed by the carbon. By simply heating the pump, absorbed gases can be driven out of the carbon and plates can be reused. Pump is reported to work on practically all gases and can be used for pumping out all systems.

(Ionic pump information courtesy of General Electric Company Dept. CP, 1 River Road, Schenectady 5, N. Y.)

Advantages of farming out work to medium-size firm explained

Plant facilities of medium-size firm making custom-built machinery are described and illustrated in four-page bulletin. Photographs show shops, Meehanite foundry, and fabricating tools. Literature emphasizes advantages of this size company for "farmed-out" work.

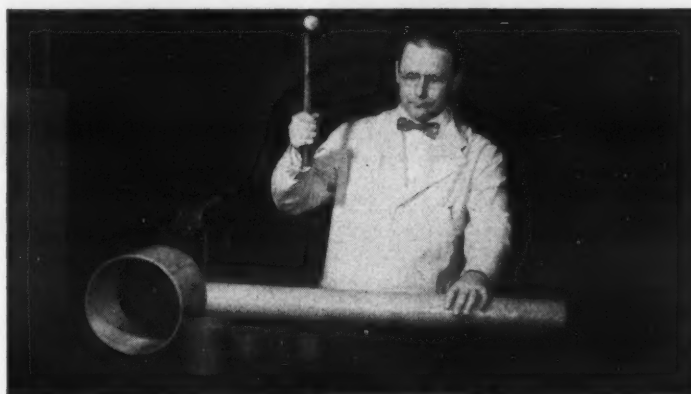
Bul AS-456 is issued by Hardinge Manufacturing Company, Dept. CP, 240 Arch Street, York, Pennsylvania. When inquiring reader may simply specify CP 1568 on the convenient Reader Service slip which is located between pages 2 and 3.

For more information on product at left, specify CP 1569 . . . see information request blank between pages 2 and 3.

PROGRESS THRU RESEARCH . . . at GENERAL MILLS

Non-Volatile Resin Makes Strong Glass Fiber Laminate

☆☆ Fatty Acids Improve Alkyd Color ☆☆ Fatty Nitrogens for Textiles



A smashing blow with a heavy sledge hammer fails to damage impact-resistant, glass reinforced laminates made with a new blend of Polyamide and epoxy resins.

Producers of glass laminates appreciate the new Polyamide-epoxy resin blends because they show physical properties superior to other thermo-setting materials.

These new resin blends have a natural affinity for glass, in either sheet or fiber form. This affinity helps wet the glass quickly and thoroughly, leading to fewer voids and a better bond of resin to glass. Their water resistance, too, is important to makers of glass reinforced plastic pipe or surface coatings for laboratory furniture and equipment.

Polyamide-epoxy resin blends are resistant to alkali and to a wide range of corrosive chemicals and solvents.

Laboratory test results have shown greatly superior impact strength, especially for the Polyamide Resin 115-epoxy resin blends. Polyamide Resins are non-volatile and have no unpleasant odor. Also, over a year of experimental work has been carried on with no toxic effects to personnel. Tests show that Polyamide Resin is practically unextractable by water or lard oil.

The low shrinkage of Polyamide-epoxy resin blends permits close conformation to the mold, with less tendency to crack during the curing cycle. Low exotherm and low shrinkage are properties which promise a bright future for Polyamide-epoxy

blends in the potting and casting and in the tool and die fields . . . especially automotive and aircraft.

For added information, mail the coupon below.

☆☆☆☆ Did You Ever Notice that the subdued-light side of a white-painted object is often yellower than the exposed side? The action of linolenic acids in the alkyds causes this yellowing.

Such discoloring does not happen with alkyds made from General Mills Aliphats (fatty acids) 16-A and 16-BW. Each is a fractionally distilled and refined combination of oleic and linoleic acids, with no linolenic acids present. This feature, and the high unsaturated acid content, makes these fatty acids excellent raw materials for producing glycerolphthalate resins for superior non-

yellowing enamels and varnishes with water-white properties.

Because of their excellent color stability and rapid baking qualities, Aliphats 16-A and 16-BW are also suitable for alkyd resins used as plasticizers in air-drying lacquers and enamels, and in baked finishes in conjunction with urea or melamine resins.

Typical composition of Aliphat 16-A is 55 per cent linoleic acid (91 percent oleic and linoleic) and of Aliphat 16-BW, 56 per cent linoleic acid (88 per cent oleic and linoleic).

If you would like more information on General Mills fatty acids, please mail the coupon below.

☆☆☆☆ Fatty Nitrogen Compounds became an even larger part of the General Mills chemical picture recently with the commercial introduction of two new fatty nitrogens—General Mills Alitrite 7 D and Alamide H 26.

Alitrite 7 D (distilled stearo-nit- rile) and Alamide H 26 (hydrogenated tallow amide) are chemical intermediates in making textile finishes which impart durable water-repellency to articles such as hats, raincoats and play clothes. They also afford certain antistatic, wrinkle resistant properties; help improve the "hand" of the cloth.

Durable water repellents derived from Alamide H 26 work exceptionally well on cottons and rayons. The excellent color and color stability of Alamide H 26 carry over into the textile finish.

For more information about General Mills fatty nitrogen compounds, just mail the coupon below.

PROGRESS THRU RESEARCH

General Mills CHEMICAL DIVISION KANKAKEE, ILLINOIS

Please send me additional technical information for the products checked below.

- | | |
|--|--|
| <input type="checkbox"/> Polyamide Resin 115 (for use with epoxy resins) | |
| <input type="checkbox"/> Aliphat 16-A | <input type="checkbox"/> Aliphat 16-BW |
| <input type="checkbox"/> Alitrite 7 D | <input type="checkbox"/> Alamide H 26 |

Name

Firm

Address

City State

SEND THIS COUPON:

When inquiring check CP 1570 on handy form pgs. 2-3

Study reveals effect of light on coated and uncoated groundwood paper . . .

finds that clay coating offers considerable protection

Study of the degradation effect of light on coated and uncoated groundwood papers was recently made by the National Bureau of Standards. Groundwood, one of the least expensive papermaking fibers, is used for newsprint and other less-permanent publications.

Light source used was a carbon arc lamp with a cupric chloride filter and heat exchanger to remove the infrared. Filtered light was as close as possible to sky light filtered by ordinary window glass, but its intensity was considerably higher. Constancy of light dosage was checked with light meter.

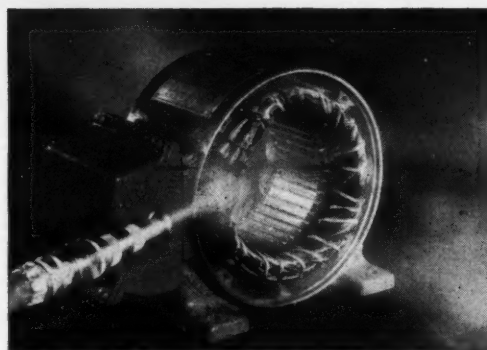
Papers were maintained between 31 and 33°C during irradiation and the air passing through them had a relative humidity of about 57%.

Degradation of coated groundwood papers was compared with that of coated papers containing no groundwood, as well as uncoated papers with and without groundwood. It was found that a clay coating, frequently added to achieve a better printing surface, gives considerable protection against degrading effects of light. In fact, yellowing of coated groundwood fibers was only about half that of uncoated fibers of similar composition. Coating consists of finely divided clay mixed with starch, glue, casein, or synthetic resin as a binder.

(Information courtesy of National Bureau of Standards, US Department of Commerce, Dept. CP, Washington 25, D. C.)

What makes employes better workers?

Motivation — what makes employes good, bad, or indifferent — is discussed in 44-page booklet. Five papers on the subject are presented. All of them stress importance of group participation, employe-centered instead of production-centered supervisors, and the need to practice, on the job, what is learned in supervisory training programs conducted by industries.



Here's a Life-Line "A" stator that has been given multiple dips and bakes of Bondite. There is no evidence of vapor penetration after being exposed to the toughest insulation test—a jet of steam.



Try tearing a piece of Life-Line's slot insulation, Mylar*. Mechanical strength is eight times greater than ordinary slot cells. Dielectric strength is ten times greater than standard design requirements.

*Trade Mark for Du Pont polyester film

There's more to motor insulation than its ability to repel water

These demonstrations show how new **Life-Line A** insulating materials provide greater protection for wire, slots and complete stator.

New and improved motor insulations are the word of the day. Actually, there is a considerable range between the run-of-the-mill "improved" insulations and the really outstanding types now available. There is only one way to judge them—by comparison.

For example, many new stator insulations do a more effective job of shedding water. But Life-Line's® new Bondite goes a step further... it repels vapors

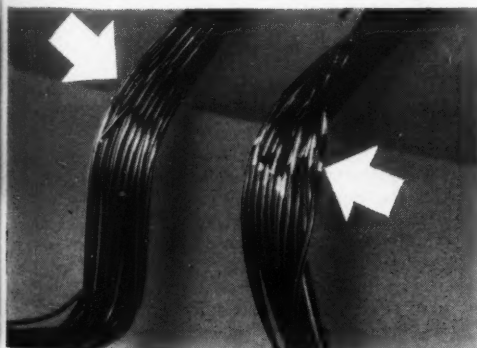
that penetrate ordinary water-shedding insulations.

The secret is in the silicone additive that is impregnated throughout Bondite instead of being just applied as a thin outer layer. The complete story of Life-Line's Bondite, Bondar and other new motor improvements is contained in the new Life-Line Booklet B-6154. For your copy, write: Westinghouse Electric Corporation, 3 Gateway Center, P. O. Box 868, Pittsburgh 30, Pa. J-21847-A

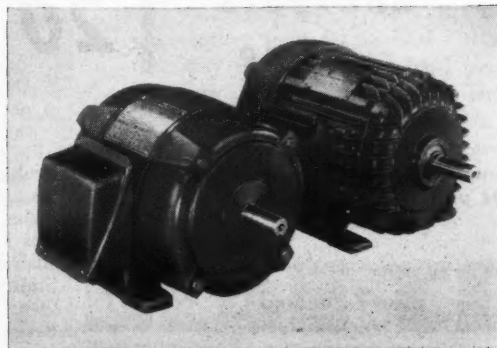
YOU CAN BE SURE...IF IT'S
Westinghouse



◀ A duck's ability to shed water is only feather deep. A simple wetting agent dissolves the duck's protective coating and he sinks. Many water-shedding motor insulations react much the same; expose them to a simple solvent and they deteriorate.



These two coils have been baked for 50 hours at 400° F. Bent around a finger, the ordinary insulation on the right coil flaked off. Life-Line's Bondar insulation on the left remained intact.



Dependable performance takes balanced design. That's why every component in the new Life-Line "A" has been redesigned and integrated with the whole. The result is a motor with superior performance.



One paper discusses practical examples of putting human relations research results to work in a large utility company.

For a copy of "Motivation: The Core of Management" remit \$1.00 (members) or \$1.25 (non-members) direct to American Management Association, Department CP, 330 West Forty-second Street, New York 36, New York.

Methods for converting calcium carbonate waste to profit

Millions of tons of calcium carbonate "waste" currently are piling up outside of industrial plants. This material is formed from processes using dolomite as the base material for production of asbestos, 85% magnesia, insulation, and chemical and pharmaceutical magnesium oxide. While the material now on stockpiles is worthless due to its high moisture content, freshly produced or protected deposits, substantially pure, can be made into a saleable product.

A simple drying operation produces a product competing with commercial whiting selling anywhere from \$6 to \$40 per ton.

Another drying operation using temperatures of about 500°F yields a product equivalent to commercial precipitated chalk used for fillers in rubber and paint at \$30 to \$50 per ton and as agricultural lime at \$9 per ton. All material would have to be ground in high-speed grinder.

Calcination to calcium oxide is another way of preparing the material. No grinding operation is involved and the end product approximates material selling for \$9 per ton.

(Study on recovery of calcium carbonate was made by R. A. Noor, Consultant to General Industries, Incorporated, Department CP, 309 South Broad, Philadelphia, Pennsylvania.)

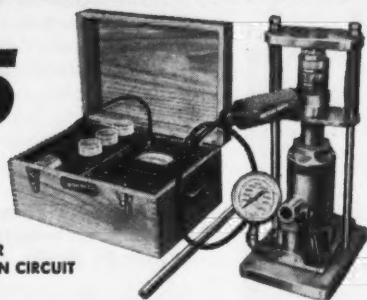
◀ For more information on product at left, specify CP 1571... see information request blank between pages 2-3.

A 1 MINUTE MOISTURE CHECK

INSURES QUALITY OF PRODUCT
WHEN YOU USE THE
NEW MOISTURE REGISTER

G5

EXCLUSIVE
R. F. POWER
ABSORPTION CIRCUIT



PROVED IN THE FIELD ON

SUGARS

STARCHES

FLOURS

CITRUS PULPS

SOAPS

DRIED EGGS

FEEDS

POWDERED CHEMICALS

YEASTS

BAKING MIXES

MEALS

FERTILIZERS

Send Coupon TODAY!

**ELECTRONIC
MOISTURE REGISTER**

Moisture Register
testing equipment
is the standard in moisture
testing for all industries.

1510 W. Chestnut St., Alhambra, California, Dept. CP

Please send me complete information on MODEL G5
MOISTURE REGISTER. I want to test _____

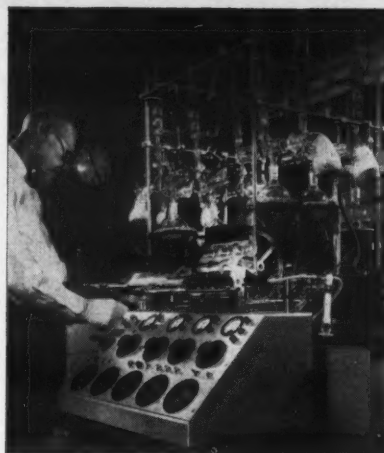
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COMPANY _____ ADDRESS _____

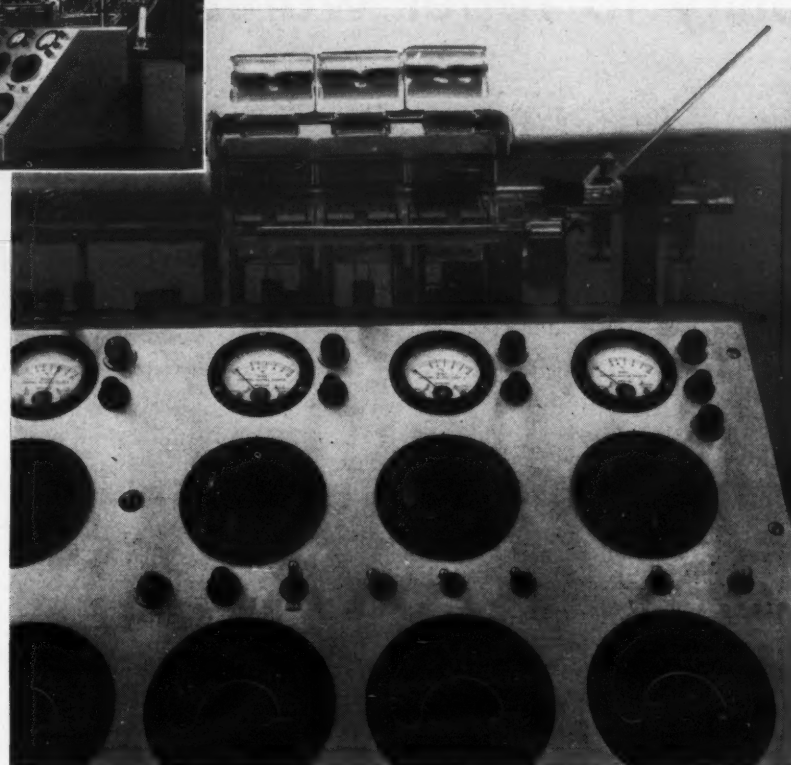
CITY _____ STATE _____

When inquiring check CP 1572 on handy form, pgs. 2-3



Mr. Shelberg inspects automatic
microfurnace

Close-up of heating elements
shows three heating sections in
raised position



Pharmaceutical lab spent 90 minutes on each microanalysis
until they built a better microfurnace. The result . . .

*analysis
time*

20 minutes

**Now commercially available, fully
automatic unit is fast and foolproof**

ELMER F. SHELBERG
Manager, Microanalytical Dept.
Abbott Laboratories

with RICHARD J. CALLAHAN, Assistant Editor

Problem: With the multitude of products and research materials being handled at Abbott Laboratories in North Chicago, quantitative organic analyses keep a large staff busy. Though delicate, the analyses must be made rapidly. Furthermore, limited quantities make micro-techniques necessary. Over the past few years, Mr. Shelberg and Mr. Berg of the micro-laboratory have searched for faster techniques — particularly a faster micro-furnace.

Solution: Their investigations proved one thing:

for the laboratory

there was no ready answer to the problem. But by adapting equipment, developing new ideas and finally carrying these through the breadboard and prototype stage, they've built a fast, fully automatic microfurnace.

The section of quartz tube in which the sample is placed is heated by three separate and individual heating elements. When a micro boat containing a 2 to 5 mg sample has been placed in the tube, operation begins. Timers and heat controls allow time and temperature for each third of the tube to be controlled. After the successive heating of the first, second and third portions of the tube, covers of the heating elements raise away from it automatically, and at the same time a cooling stream of air is started across the tube. A buzzer signals completion of combustion cycle.

Combustion gases, forming H_2O and CO_2 are picked up on absorption tubes of Anhydrone and Ascarite. Tubes are then weighed and again placed on the combustion unit, ready for the next assay.

Results: In operation for approximately 1 year, the microfurnace has developed no "bugs." Accuracy has been maintained and micro-analysts are pleased with the operation. So is Mr. Shelberg . . . analysis time has been cut from $11\frac{1}{2}$ hours to about 20 minutes.

(Basic assembly and components, including patented radiant furnace sections were supplied by E. H. Sargent & Co. Though not in regular manufacture with all of the Abbott-developed automatic features, the basic assembly with automatic temperature program is available from stock of manufacturer, E. H. Sargent & Co., 4647 W. Foster Ave., Chicago 30, Illinois. . . or for more information reader may simply check CP 1573 on the convenient Reader Service slip which is located between pages 2 and 3.)

Initiates 90 day trial period for infrared equipment at user's plant

Since purchasing infrared spectrometers involves a sizeable cash outlay as well as commitment of personnel, Perkin-Elmer Corp., has initiated a trial program for potential users.

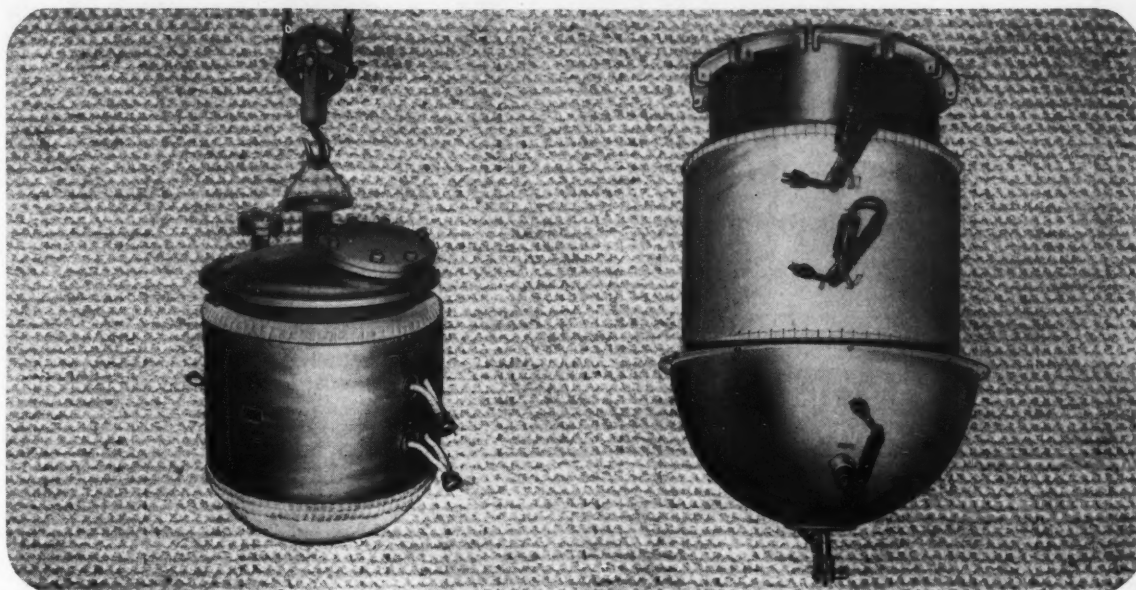
The plan operates as follows: a Model 12-C single-beam infrared spectrometer is installed in user's plant. Personnel are instructed for two days on operation and interpretation of results. Basic sampling cells needed for the type of product control work to be conducted are left with user. During the next 90 days, frequent follow-ups are made to resolve any difficulties that might arise.

If user decides infrared is not suitable to his needs, only cost he pays is fee for installation and two days of instruction.

(Complete details of plan are available from the Perkin-Elmer Corp., Dept. CP, Norwalk, Conn. . . or for more information check CP 1574 on handy form, pages 2 and 3.)

... for rough handling a New Heating Mantle ... made with tough New fabric! the GLAS-COL "R"

("R" for rugged)



- ... for rugged, punishing use at temperatures to 650 C**
—virtually eliminates fabric breakage
- ... for pilot and production plant applications**
- ... for large equipment with capacities to 200 gallons**

The new 650C GLAS-COL "R" represents one of the most important advances in electric heating mantle design and construction in many, many years.

These mantles are made of a remarkable, wear-resisting and break-resisting fabric developed and thoroughly tested by GLAS-COL's design and engineering staff. GLAS-COL "R" Mantles will definitely stand up under hard usage and rough handling . . . they're ideal for large equipment used in pilot and production plants. Fabric breakage, sometimes experienced with conventional 650C quartz fabric mantles, is minimized . . . practically eliminated.

The new 650C GLAS-COL "R" has many uses and applications including:

- Distillation of chemicals
- Vapor-phase cracking in tubes
- Curing of rubber and plastic materials (blankets for curing chambers)
- High temperature drying and baking of enamels and paints
- Annealing glass, plastic, or metal
- Roasting and drying of catalysts
- Roasting food products such as coffee or peanuts (blankets for roasting beds)
- Heat treating of textiles

If you have a pilot or production plant application that calls for controlled heating to 650C, investigate the new GLAS-COL "R" electric heating mantle. Write for detailed information.



Glas-Col Apparatus Co., Inc., Dept. CP,
711 Hulman St., Terre Haute, Indiana.

U. S. Patent No. 2,231,506 U. S. Patent No. 2,282,078

GLAS-COL Electric Heating Mantles

Trademark: Registered U. S. Patent Office
SPECIALISTS IN LABORATORY AND PILOT PLANT HEATING PROBLEMS

When inquiring check CP 1575 on handy form, pgs. 2-3

*Thank modern electronics
for this:*

**A full-fledged line-operated
pH Meter of remarkable accuracy
at the UNPRECEDENTED price of**

\$115⁰⁰

**... made possible by recent
advances in electronic tubes and
circuits.**

Write for Bulletin #225 to

PHOTOVOLT CORPORATION
95 MADISON AVENUE • NEW YORK 16, N. Y.

**PHOTOVOLT pH METER
MOD. 115**



- SIMPLE in operation and maintenance.
- FAST and dependable in daily service.
- FULLY stabilized for wide range of line voltage fluctuations.

When inquiring check CP 1576 on handy form, pgs. 2-3

**FOR MEASUREMENT and CONTROL
of VISCOUS FLUID FLOW...**

**the ASKANIA
TRANSOMETER**

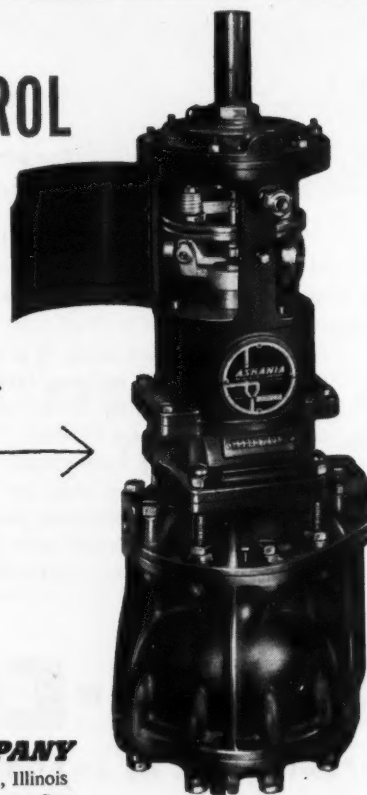
Designed for fuel oil and other viscous liquids, the Askania Transometer accurately measures flow and transmits a corresponding pneumatic signal.

This signal can be in the range of inches w. c., to match equivalent gas flow measurement; or in the standard instrument transmitter range of 3-15 p.s.i.

Sturdy Askania construction, over-range protection, built-in integrator, wide range. Write for Bulletin 125.

ASKANIA  **REGULATOR COMPANY**
242 E. Ontario Street, Chicago 11, Illinois
Subsidiary of General Precision Equipment Corp.

When inquiring check CP 1577 on handy form, pgs. 2-3

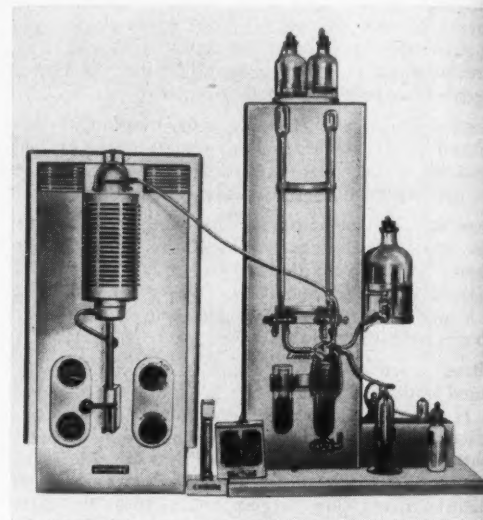


FOR THE LABORATORY

**Single instrument determines
sulfur-carbon content
in 10 minutes...**

high frequency combustion unit helps speed
process normally taking 35 minutes

Determinator is designed to meet needs of the small volume laboratory as well as those where carbon and sulfur analysis must be made on every sample. Determination time for each sample is about 10 minutes. Self-filling, automatic-zero, large capacity burets enable sulfur contents up to .30% to be analyzed



High-frequency unit (left) combined with sulfur-carbon determinator (right)

with one gram sample. Sealed titration vessel incorporates filling and drain tubes. This eliminates need for removal and reduces possibility of breakage. Rear half of titration vessels and comparator cell have mirror surface for color endpoint comparison to prevent error due to forgetting initial color or shade before titration. High frequency combustion unit is engineered to heat samples at temperatures up to 3000°F.

(DS-C determinator and H-F unit are manufactured by Lindberg Lab. Equip. Div., Lindberg Engineering Co., Dept. CP, 2450 W. Hubbard St, Chicago 12, Ill. . . . or for more information check CP 1578 on handy form, pages 2 and 3.)

**For the latest in laboratory equip-
ment...**

look in the alphabetized, itemized Product Directory beginning on page 198. All articles presented in this issue of **CHEMICAL PROCESSING** are listed there.

accuracy

at High Operating Speed with Despatch LABORATORY OVENS



- Positive Air Intake
- Guaranteed Heat Elements 2700 to 12,000 watts
- High Volume Fan
- Air Velocity Control
- Accurate Indicating Control
- Modern Design — Rounded Corners

Despatch Laboratory and Production Ovens are ideally suited to all types of research . . . testing . . . production control. They are designed to provide the closest heat uniformity through every inch of the work chamber . . . consistently accurate temperature control at all heats . . . ample speed to process capacity loads at any desired operating temperature.

Chemical and analytical, drying and baking, preheating and aging, sterilizing and curing, food dehydrating — these are just a few of the uses. Available in six models, with inside dimensions ranging from 13"x13" to 37"x25"x50".

DESPATCH
Established 1902

Manufacturers of Ovens

For All Purposes

ASK FOR BULLETIN No. 106

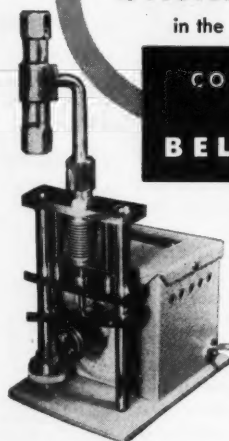
343 DESPATCH BLDG., MINNEAPOLIS 14, MINN.

When inquiring check CP 1579 on handy form, pgs. 2-3

HOW Contamination Is Prevented

in the

**CORSON-CERVENY
MICRO-
BELLOWS PUMP**



All parts of the Corson-Cerveny Micro-Bellows Pump in contact with the liquid being pumped are made of stainless steel and machined so that they fit together without packing, gasket material or any pipe compounds. The use of accurately machined cone-taper fittings makes this feature possible.

For this reason, the pump will not contaminate material that it is handling, and is adaptable for many specialized laboratory uses.

For full information about construction, capacity, performance, write for copy of Pump Booklet.

RESEARCH APPLIANCE COMPANY

Box 463, West View Road, Pittsburgh 9, Pa.

When inquiring check CP 1580 on handy form, pgs. 2-3

AUGUST, 1954

LABORATORY

Less than 5 microamp
needed to activate
15-amp relay . . .

provides "fail safe" operation of electrical devices

Uses: For opening and closing circuits with loads to 15 amp AC. Relay is sensitive to signals of less than 5 microamp.

Features: Proper selection of control and output circuits permits the desired mode of control with complete "fail safe" operation of any electrical device.

Description: Relay has been designed for laboratory or industrial use for constant-temperature baths, constant-pressure or liquid level control, photoelectric counting, control or alarm systems and other uses.



Laboratory relay uses DC vacuum-tube circuit

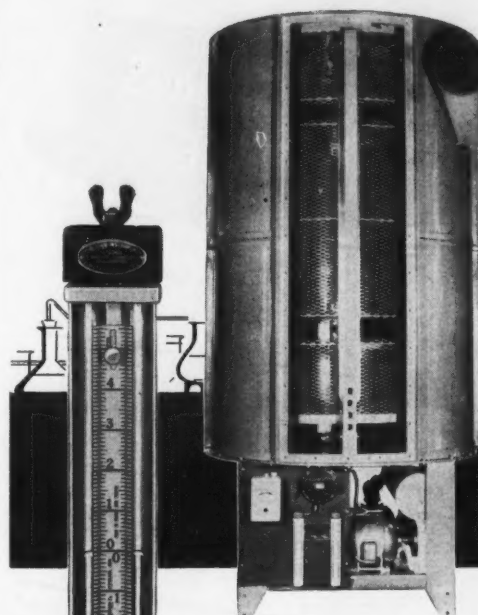
Sensing device for the relay may be contactor, phototube, or other sensitive unit.

Control device and cabinet are isolated from AC power line. DC vacuum-tube circuit provides stability as well as provisions for external delay circuits. Relay operates on 115v AC. Unit measures 6 1/2 x 4 1/4 x 4 1/4".

(Relays are a product of Chicago Apparatus Company, Department CP, 1735 North Ashland Avenue, Chicago 22, Illinois . . . or for more information concerning manufacturer's product, check CP 1581 on handy form located between pages 2 and 3.)

MERIAM MANOMETER ACCURACY

"...important,
economical,
dependable
in dust
collection"



Aeroturn Dust Collectors manufactured by Turner and Haws Engineering Co., Inc., West Roxbury, Massachusetts, are equipped with two Meriam Manometers, as illustrated, to indicate pressure.

Each Standard Model of Aeroturn Dust Collectors has been equipped with two Meriam Manometers for the past six years. One indicates—in inches of water—the pressure loss of the filter medium. The other—in inches of mercury—indicates output pressure of a positive displacement type of blower. The blower supplies air for an automatic filter cleaning apparatus.

"Meriam Manometers provide an economical, accurate and dependable means of showing pressure information which is of great importance in the operation of our dust collectors," say Turner and Haws Engineering Co., Inc.

If you have a pressure problem call your MIT* Man, or write us. We make instruments that are primary standards for indicating pressure or flow of liquids and gases.



*Meriam Instrument
Technical Man

THE MERIAM INSTRUMENT CO. • 10940 MADISON AVE. • CLEVELAND 2, OHIO

Western Division: 4760 E. Olympic Boulevard, Los Angeles 22, Calif.

In Canada: Peacock Bros., Ltd., Montreal

MERIAM
★
Instruments
★
ESTABLISHED 1911

MANOMETERS, METERS AND GAUGES FOR THE ACCURATE MEASUREMENT
OF PRESSURES, VACUUMS AND FLOWS OF LIQUIDS AND GASES

When inquiring check CP 1582 on handy form, pgs. 2-3

ON OPERATIONS
LIKE THESE . . .

MAKE SAVINGS
LIKE THESE . . .

COMBUSTION

Boilers, Kilns, Direct-Fired Heaters,
Stills, etc.

Higher Combustion Efficiency
at Lower Fuel Costs

PROCESSING

Air Liquifaction . . . Processing Buta-
diene, Acetylene and Similar Gases

Better Product Quality with
Minimum Oxygen or Air
Contamination

PLANT SAFETY

Hydrogenation, Hydrofining, Gas Com-
pressors, Sulfur Grinding, etc.

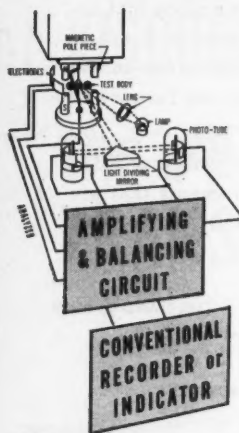
Control explosive atmospheres,
reduce fire risks, minimize
plant and personnel hazards

PRODUCT PROTECTION

Resin Kettles, Color Pigments, Product
Storage, etc.

Reduce oxidation, maintain
product standards with con-
trolled purge systems

with Arnold O. Beckman Oxygen Analyzers



MANY RANGES: MODEL F . . .
ranges of 0-5%, 0-10%, 0-15%
O₂ and higher.

Accuracies as high as .05% O₂.

MODEL G . . . for O₂ concentra-
tions as low as 0-1000 ppm—
as high as 95-100% O₂.
Accuracies to 40 ppm.

The various applications highlighted above are only a few of the many ways Arnold O. Beckman Oxygen Analyzers—industry's great new profit builders—are being used by progressive operators to boost profits, cut costs.

These are the *only* oxygen analyzers that *continuously* measure process streams by an advanced magnetic principle that provides *direct physical measurement of the oxygen itself*—not of some secondary relationship.

Heart of the unit, as illustrated, is a dumbbell-shaped test body suspended in a magnetic field. Sample gas surrounding this test body causes it to rotate in the field, depending upon the oxygen content of the gas. The movement of a light beam, reflected by a small mirror on the test body, is measured by simple electronic circuits . . . and the result indicated directly on a conventional recorder or indicator. It's simple, positive, accurate!

No chemicals—filaments—catalysts
cams—complicated mechanical parts!

Send for **Helpful Free Literature** which describes this
unique operating principle in detail—explains its many
advantages and applications. When writing, outline your par-
ticular operations—we'll gladly supply specific applications.

Arnold O. Beckman INC.

1020 MISSION STREET, SOUTH PASADENA 19, CALIF.

When inquiring check CP 1583 on handy form, pgs. 2-3

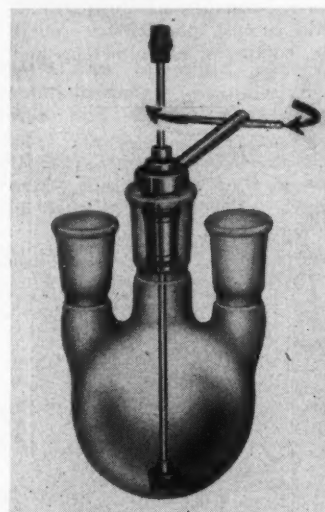
LABORATORY

**Needs no mercury seals
to stir under vacuums
down to 2 mm**

Uses: For stirring metal dis-
persions, solid-liquid reactions
where shearing action is neces-
sary, or liquid-liquid reactions
where reagents are not miscible.

Features: Unit is designed to
stir under vacuums to 2 mm with-
out use of mercury seals. Stir-
ring speeds to 20,000 rpm can be
attained by stirrer.

Description: Impellor is stain-
less steel. Built-in water-cooled
jacket surrounds oilless bearing.
Seal is made through double "V"



Arrows show inlet and outlet for
water in stirring unit

teflon washer. Impellor may be
powered by air or series-wound
electric motors.

(Stirrers are a product of Labline,
Inc., Dept. CP, 217 N. Des-
plaines St., Chicago 6, Ill. . . . or
check CP 1584, pages 2 & 3.)

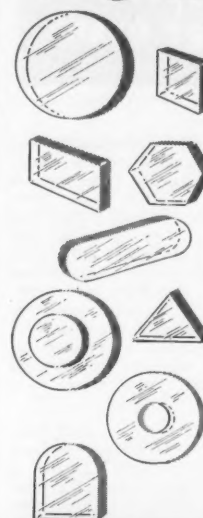
Bulletin shows 15 models of research microscopes

Illustrated eight-page bulletin
describes 15 models of research
microscopes with either mo-
nocular or binocular bodies.

Bul on No. 5 models is issued
by Instrument Div., American
Optical Co., Dept. CP, Box A,
Buffalo 15, N.Y. Specify CP
1585, pages 2 and 3.

Call SWIFT for SIGHT GLASSES

precision-ground in
perfectly true circles



Let us supply you with Per-
fectly True Circles precision-
ground from heat-resistant Py-
rex Polished Plate Glass . . . used
by major chemical companies
from coast to coast. Resist cloud-
ing, pitting, chemicals (except
HF and strong hot caustic so-
lutions).

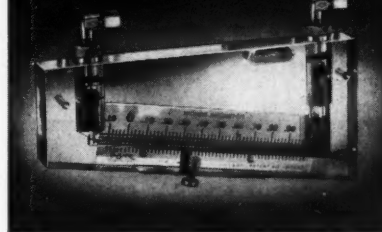
We can deliver immediately
specially cut round, square, rec-
tangle or odd-shaped Sight Glas-
ses in 8 thicknesses ($\frac{1}{8}$ " to 1"),
sizes up to 24" x 60". Write, wire
or phone for quotation. Ask for
Sight Glass Bulletin.

SWIFT Glass Division

SWIFT LUBRICATOR COMPANY, INC., ELMIRA, N.Y.
330 Tenth St., San Francisco 3 • 140 Boylston St., Boston 16
837 Matwa St., Los Angeles

When inquiring check CP 1586 on handy form, pgs. 2-3

DWYER AIR FILTER GAGE



A constant
visual
check of
filter
efficiency
on **ANY**
system

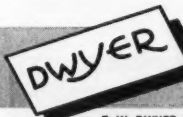


(Exclusive 3-way
Dwyer Vent Valve,
optional)

Determines exact filter efficiency the
only practical and economical way—
via pressure drop. Dwyer's low first cost
is repaid over and over thru savings in
replacement and service time, plus
maintained optimum filter efficiency.

Break-proof plastic construction, life-
long accuracy, simple installation, no
moving parts to ever wear out or get
out of adjustment. Six different scales.
A complete unit with all necessary
tubing, fittings, etc.

Write for informative catalog page



**Specialized
INSTRUMENTS and GAGES**

F. W. DWYER MFG. CO. • 335 SO. WESTERN AVE. • CHICAGO 12, ILL.

When inquiring check CP 1587 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Records X-ray diffraction patterns of powdered samples in ranges as high as 1000°C . . .

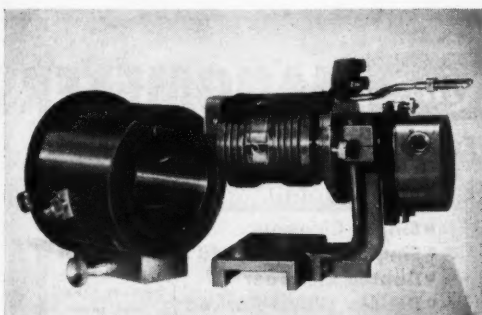
movable film carrier allows five 7-mm patterns to be recorded on same film by camera

Uses: Designed for general purpose X-ray diffraction investigations of substances at controlled elevated temperatures up to 1000°C.

Features: Temperature of specimen can be changed from one thermal level to another with equilibrium obtained rapidly. Adjustable temperature control and movable film carrier of camera facilitate determination of phase diagrams and registering comparison patterns of specimens at selected temperatures.

Description: Movable film carrier allows five 7-mm patterns to be made on same film. Carrier is 114.6 cm in diameter with 20 ranges continuous from 7 to 173 degrees. It may be removed from furnace assembly at any stage of investigation without disturbing thermal environment of powder sample. Standard 35-mm X-ray film may be used for single exposures.

Coiled helix furnace heating elements are of platinum-rhodium, supported by two concave ceramic bodies. Simple exponential function of about four minutes approximates furnace's heating and

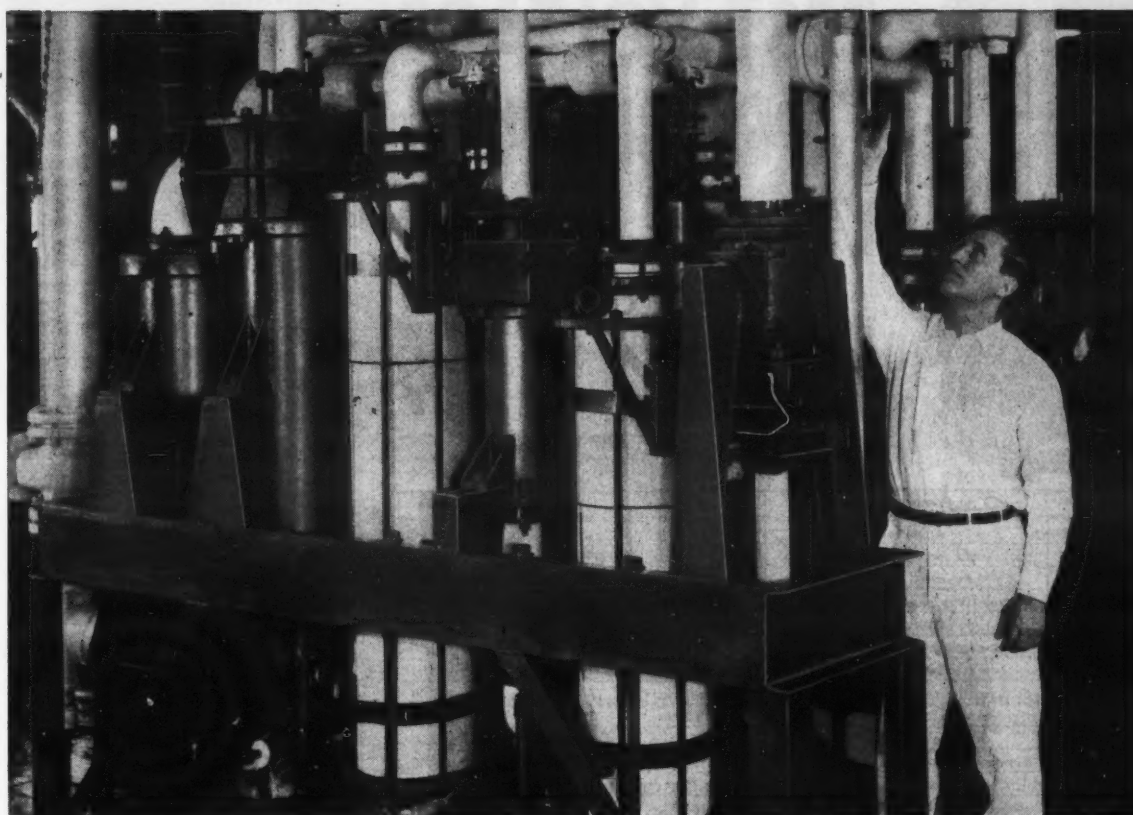


Camera has adjustable temperature control and movable film carrier

cooling curves. Thermocouple for temperature determinations can be positioned in heating cavity where X-ray beams intersect sample or in retracted position in line with specimen axis.

Samples may be mounted and aligned externally on ball-bearing spindle which is rotated by a 1-rpm motor. Aligning fixtures and film punch are included as standard equipment. Special wattmeter, voltage stabilizer and variable transformer are available at extra cost. Length of the assembled movable film carrier is 8½ inches and its total weight is 15 pounds.

(X-ray diffraction powder camera is a product of Dept. KP, Central Research Laboratories, Inc., Dept. CP, Red Wing, Minn. . . or for more information reader may simply check CP 1588 on the convenient Reader Service slip which is located between pages 2 and 3.)



FOUR-STAGE WORTHINGTON STEAM JET EJECTORS of impervious graphite, with two porcelain barometric intercondensers at Pfizer plant. Ejectors are used to maintain vacuum in vitamin A synthesis.

Worthington steam jet ejectors maintain vacuum under corrosive vapor attack at Pfizer

Exhibit A in the case for Worthington steam jet ejectors is this installation at Chas. Pfizer & Co. plant in Groton, Conn.

Two years ago these Worthington units replaced rotary vacuum pumps assigned to maintaining a steady vacuum for a distillation process in the manufacture of synthetic vitamin A. This constant vacuum of 1 mm (equal to 0.04 inches of mercury) must be held for two days, the period of processing. When corrosive vapors showed up unexpectedly in the process, the rotary vacuum pumps just couldn't take it. These vapors have no effect, however, on the Worthington ejectors which

are designed specifically to function reliably under the toughest kind of corrosive conditions.

Maybe your product is corrosive; maybe it isn't. But if you need a vacuum from atmosphere to 50 microns absolute, take a long look at Worthington's comprehensive line of steam jet ejectors which use regular plant steam. They're low in first cost, and their operating and maintenance expenses are practically non-existent — no moving parts. You can specify them in stainless, bronze, porcelain, impervious graphite, Worthite, cast iron or steel. Write Worthington Corporation, Steam Power Division, Ejector Section X.3.2, Harrison, New Jersey.

X.3.2

WORTHINGTON



Steam Jet Ejectors • Gas Compressors • Chemical Pumps • Industrial Mixers • Refrigeration Equipment

When inquiring check CP 1589 on handy form, pgs. 2-3



TEST VOLTAGE PROBLEMS

1/100 cps to 10 mc?

Hewlett-Packard has 17 different oscillator models. Some are highly specialized, others are all-purpose instruments. Almost certainly, there's a model to meet your exact requirements. All are precision instruments of highest quality. All embody the famous RC circuit pioneered by -hp-. Check the table below for the oscillator that can help you most. Then write us for complete operating and application details.

Instrument	Primary Uses	Frequency range	Output	Price
-hp- 200AB	Audio tests	20 cps to 40 kc	1 watt/24.5v	\$120.00
-hp- 200CD	Audio and ultrasonic tests	5 cps to 600 kc	160 mw/20v open circuit	150.00
-hp- 200H	Carrier current, telephone tests	60 cps to 600 kc	10 mw/1v	350.00
-hp- 200I	Interpolation, frequency measurements	6 cps to 6 kc	100 mw/10v	225.00
-hp- 201B	High quality audio tests	20 cps to 20 kc	3w/42.5v	250.00
-hp- 202A	Low frequency measurements	.01 cps to 1 kc	20 mw/10v	450.00
-hp- 202B	Low frequency measurements	1/2 cps to 50 kc	100 mw/10v	350.00
-hp- 202D	Low frequency measurements	2 cps to 70 kc	100 mw/10v	275.00
-hp- 204A	Portable, battery operated	2 cps to 20 kc	2.5 mw/5v	175.00
-hp- 205A	High power audio tests	20 cps to 20 kc	5 watts	390.00
-hp- 205AG	High power tests, gain measurements	20 cps to 20 kc	5 watts	425.00
-hp- 205AH	High power supersonic tests	1 kc to 100 kc	5 watts	550.00
-hp- 206A	High quality, high accuracy audio tests	20 cps to 20 kc	+15 dbm	550.00
-hp- 230A	Carrier test oscillator	35 cps to 35 kc	+14 dbm/600 ohms	275.00
-hp- 233A	Carrier test oscillator	50 cps to 500 kc	3w/600 ohms	475.00
-hp- 234A	Carrier test oscillator	160 cps to 160 kc	+14 dbm/600 ohms	300.00
-hp- 650A	Wide range video tests	10 cps to 10 mc	15 mw/3v	475.00

2 OF 17 DIFFERENT -hp- OSCILLATORS



-hp- 200CD Audio Oscillator

World standard for electronic or electrical measurements, now redesigned with wider range, lighter weight, smaller size. Use for any lab, field or production problem in sub-audio, audio, telephony, carrier, supersonic, telemetering or rf measurement fields. Highest stability, low distortion, constant output, no zero set while operating. With carrying strap, or for rack mounting.

Data subject to change without notice. Prices f.o.b. factory.



-hp- 202A Low Frequency Function Generator

Compact, convenient, all-purpose source of transient-free voltages between 1/100 cps and 1 kc. Provides distortion-free signals for vibration studies, servo applications, medical and geophysical work and other subsonic problems. Generates sine, square or triangular waves. Output 30 volts balanced or single ended, 1% distortion, constant within 0.2 db.

WRITE TODAY FOR COMPLETE INFORMATION

HEWLETT-PACKARD COMPANY
2705-P PAGE MILL ROAD • PALO ALTO, CALIFORNIA, U.S.A.
SALES REPRESENTATIVES IN PRINCIPAL CITIES



INSTRUMENTS FOR COMPLETE COVERAGE

When inquiring check CP 1590 on handy form, pgs. 2-3

LABORATORY

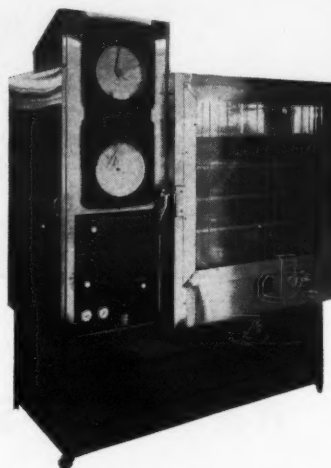
Temperature, humidity controlled for tests in cabinet . . .

low air velocity over samples prevents disturbance

Uses: Testing materials in variable temp, humidity ranges.

Features: Cabinet operates within temperature range of -20° to 200°F. Relative humidity range of 18% to near 100% may be reproduced for temperatures above 50°F.

Description: Automatic temperature and humidity controls are provided. Air circulates between two inside walls of cabinet



Produces relative humidity from 18 to near 100%

before entering the cabinet, assuring uniform conditions in testing area. Freon compressor and heating coils with dehumidify apparatus are included in cabinet.

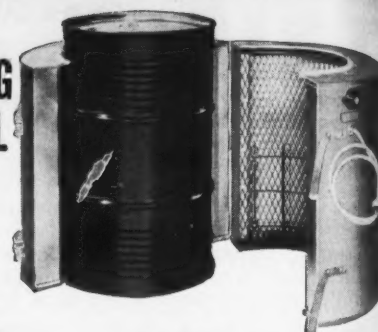
(Cabinets are a product of Package Materials Laboratories, Inc., Dept. CP, 5315 Chester Ave., Philadelphia 43, Pa. . . or check CP 1591, pages 2 and 3.)

Catalog describes all sizes of serological water baths

Two-color illustrated bulletin of four pages lists series of serological water baths.

Bul FS-244 is issued by Fisher Scientific Co., Dept. CP, 717 Forbes St., Pittsburgh 19, Pa. Specify CP 1592, pages 2 & 3.

WARMS ANYTHING IN METAL DRUMS UP TO 450°F



Automatic PALMER DRUM WARMER

A portable electric oven in two models for 55 or for 30 gallon steel drums.

Saves Time—Saves Money. Makes removal from drum by dipping, pouring or pumping, easy and convenient, for any viscous material that handles better when warm.

Operates automatically and economically. Two hinged halves, well insulated, fit around drum at point of use—eliminates handling hot drums.

Supplied for 208, 230 or 460 volts, single, or three phase. Catalogue, prices and specifications on request. Write today!

HAROLD L.

Palmer

COMPANY

2980 West Davison Ave.
Detroit 6, Michigan

When inquiring check CP 1593 on handy form, pgs. 2-3

King MANOMETERS

Every Size — for Every Service

U-Type Manometers

- Single Cleanout
- Single Gland-Packed
- Double Cleanout
- Double Gland-Packed
- High Pressure

Low in price
Trouble-free
Easy to install
and read

Well-Type Manometers

- Low Well
- Raised Well
- Barometric Reading

Stay clean
longer
Easy to service

Multi-Tube Manometers

- Multi-Well
- Common-Well
- Special-Purpose

FREE LITERATURE gives sizes, construction and prices. Write today! And ask for informative 12-page Manual on Manometers.

KING ENGINEERING PRODUCTS include King-Gages — Manometers — Self-Closing Push Valves — Pressure Transmitters — Sight Feed Bubbler — Overflow Check Valves — Air-flow Snubbers — Sediment Traps — Moisture Indicators



KING ENGINEERING CORP.

Box 270 • Ann Arbor, Mich.

REPRESENTATIVES IN PRINCIPAL CITIES

When inquiring check CP 1594 on handy form, pgs. 2-3

CHEMICAL PROCESSING

61



New Cartridge- Unit De-ionizers

For production of solids-free water in relatively small quantities in laboratories, hospitals, industrial plants.

RESEARCH MODEL—Produces water comparable to that produced by triple distillation. Removes all ionizable solids, including Silica and CO₂.

UNIVERSAL MODEL—Produces water comparable to that produced by single distillation. Removes all ionizable solids with the exception of Silica and CO₂.

Flow rate:
5 gph

Units easily replaced in a matter of seconds. Cartridge can be mounted on laboratory test stands, or in permanent bracket. No electrical connections required.

• **ILICO-WAY CARTRIDGE UNITS** embody the Mixed-Bed ionXchange principle developed by Illico-Way. More than 500,000 similar Illico-Way units have been manufactured and are in use... Write for Bulletin CA-254. Illinois Water Treatment Co., 903-8 Cedar St., Rockford, Illinois.



When inquiring check CP 1598 on handy form, pgs. 2-3

FOR THE LABORATORY

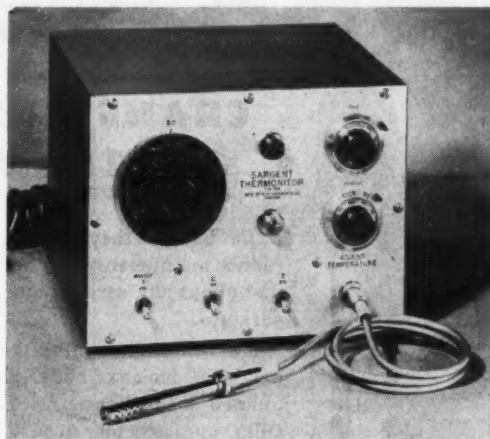
Controls temperatures in oil or water baths up to 15 liters...

instrument is sensitive to $\pm 0.01^\circ\text{C}$ in range between 0 and 100°C

Uses: For controlling temperature in oil or water baths having a volume of up to 15 liters.

Features: Sensitivity in the least exact part of scale is $\pm 0.01^\circ\text{C}$. Unit is usable in range between 0 to 100°C .

Description: Detector is bead-type thermistor which is sealed in glass and installed in shielded metal case. Thermistor has negative coefficient



Unit has three standard electrical outlets

of resistance of approx 4.7% at 25°C and time constant of less than one second. Complete glass enclosure makes thermistor suitable for all liquids. Characteristics of sensing element are unaffected by exposure to temperatures up to 300°C .

Unit has three standard outlets: 1) automatically controlled by thermistor with which 250w heater should be used, 2) continuously variable non-regulated heater outlet (up to 300w) for supplying base heat, and 3) another base heater outlet which is non-variable and non-thermoregulated. Third outlet may be used for connecting circulating device. Maximum total power to be applied to unit is approx 1000w.

Accurate measurement and recording of temperature in bath may be made by using thermometric bridge and sensitive galvanometer or recorder.

Measuring precision of plus or minus several thousandths of degree Centigrade is possible. Bridge consists of Wheatstone bridge circuit, one arm of which is thermistor-mounted in metal shield.

Unbalanced voltage from bridge is brought to three-prong plug at end of case. Detachable three-conductor cable is included for connection to standard recorders or galvanometers. At maximum sensitivity position, deflection of approx 1 mm per 0.01°C is obtained at 30°C on 0 to 2.5

- Readily Visible
- Adjustable Dial Position
- Submersible

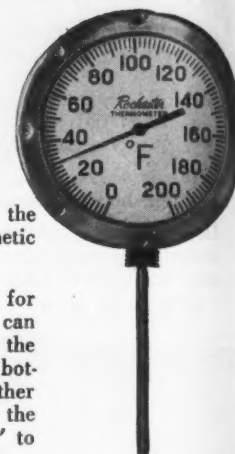
the RIGHT thermometer for your requirements

Shockproof accuracy — easily maintained with a simple external screw adjustment — another Rochester first.

All stainless steel construction including the weld, offers more corrosion resistance. Hermetic sealing protects dials from fogging.

Rochester Model No. 1850 is recommended for use wherever a straight form thermometer can be used to an advantage. Model 1850 in the standard form has the stem located at the bottom. The stem can also be located at any other position around the entire periphery of the head. Available in stem lengths from $2\frac{1}{2}''$ to 48".

For further information on this straight form or other type thermometers — write



Rochester

Manufacturing Company, Inc.
86 Rockwood St., Rochester 10, N. Y.

DIAL THERMOMETERS GAUGES AMMETERS



When inquiring check CP 1599 on handy form, pgs. 2-3



3-WAY DIVERTER VALVE

This special, stainless steel diverter valve handles air-conveyed solid material which may pass directly through the valve or through the angle duct. The diverter vane is operated by an air cylinder, suitably interlocked with limit switches for complete remote control.

W. S. Rockwell diverter valves are made to order for many applications. They are part of the complete line of Butterfly Valves available in

sizes to 132", of any metal or rubber lined, for flow control and shut-off at temperatures to 2000°F . and pressures to 300 p.s.i. and higher.



W. S. ROCKWELL COMPANY

BUTTERFLY VALVES • SLIDE VALVES • AUTOMATIC VALVES

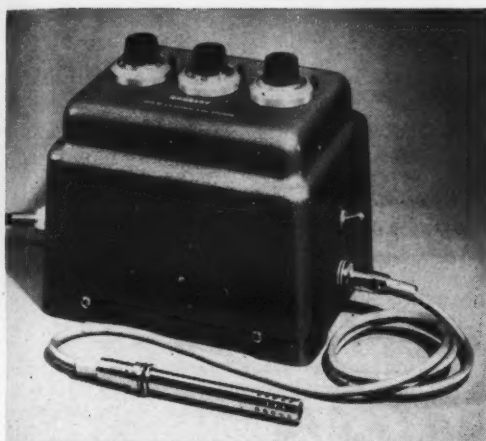
2204 ELIOT STREET • FAIRFIELD, CONN.

Sales Representatives in Principal Cities

When inquiring check CP 1600 on handy form, pgs. 2-3

CHEMICAL PROCESSING

FOR THE LABORATORY



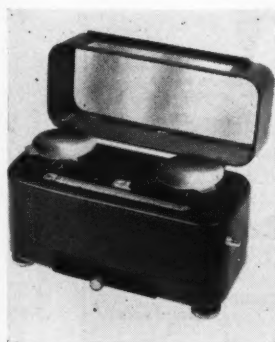
Bridge may be connected to recorder or galvanometer

mv range recorder. Resistances on balancing arm are in ratio of 100 to 1, providing coarse and fine adjustments. Ten-turn potentiometer in conjunction with dry cell comprises power supply to bridge.

(Temperature controller and thermometric bridge are products of E.H. Sargent & Co., Dept. CP, 4647 W. Foster Ave., Chicago 30, Ill. . . . or for more information reader may simply check CP 1601 on the convenient Reader Service slip which is located between pages 2 and 3.)

Stainless steel construction protects vital scale parts from corrosion . . .

graduated beam and index are easily read through glass front of lid



Positive-acting arrest and $3\frac{1}{2}$ " diameter pans of laboratory scale are made of stainless steel to protect against laboratory fumes and corrosion. Sensitivity is 5 mg and capacity, 120 gm. High cover of balance ($2\frac{3}{4}$ ") permits balance to function with 100 gm weight on pan with lid closed. Graduated beam and index

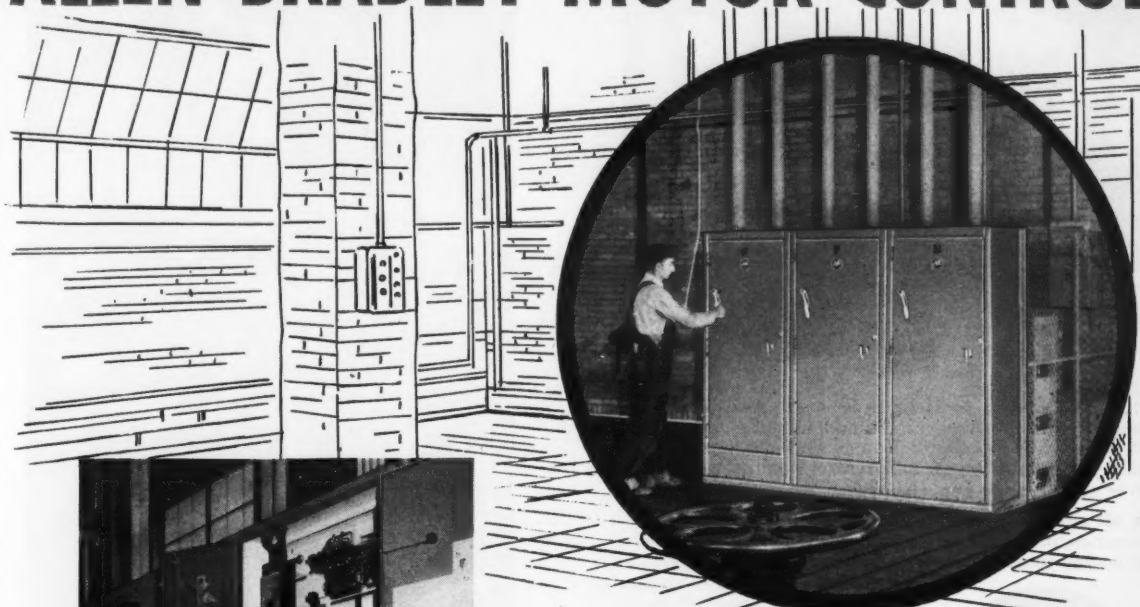
are easily read through glass front of lid.

(Laboratory balance is a product of Torsion Balance Co., Dept. CP, Clifton, N.J. . . . or for more information reader may simply check CP 1602 on the convenient Reader Service slip which is located between pages two and three.)

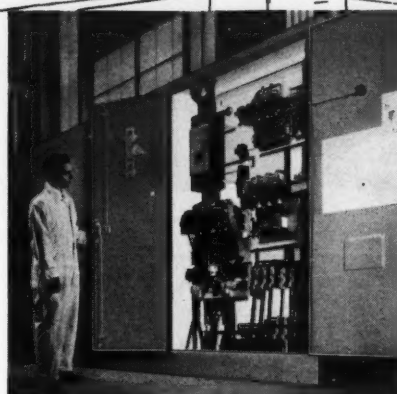
In sewage disposal plants...

it pays to install trouble free

ALLEN-BRADLEY MOTOR CONTROL



Allen-Bradley Starters controlling 100 hp slip ring motors in the Milwaukee Sewage Disposal Plant.



Allen-Bradley Bulletin 761 Slip Ring Motor Starters controlling 350 hp motors in the Milwaukee Sewage Disposal Plant.

Wherever the need is vital for continuous, reliable operation, especially in the case of a sewage plant where the public health is involved, it pays to install dependable Allen-Bradley control on all motorized machines and equipment.

Why is this claim for dependability of Allen-Bradley controls justified? In the first place, it is backed by at least 20 years of field experience with the present designs. However, the real answer lies in the simple solenoid design—only ONE moving part—a reliable assurance for millions of trouble-free operations. The double break, silver alloy contacts require no filing or dressing, a timesaving and money-saving feature . . . and a blessing to the busy maintenance engineer. Continuously dependable overload relays protect motors, men, and machines, irrespective of what the operating conditions may be.

Allen-Bradley has a broad line of motor controls for the chemical and process industries—in special enclosures for all operating conditions. Let us send you the new 120-page "Handy" catalog—it is full of information that can be useful to you!

Allen-Bradley Co.
104 W. Greenfield Ave., Milwaukee 4, Wis.

ALLEN-BRADLEY
SOLENOID MOTOR CONTROL

The Sign of Quality in Motor Control



When inquiring check CP 1603 on handy form, pgs. 2-3

What's YOUR Heating or Air Conditioning Control Problem?



...with their 60 years of experience installing pneumatic systems of temperature and humidity control in all types of important buildings are well qualified to help you obtain the greatest return from an investment in —

ACCURATE UNIFORM CONTROL

in all types of heated or air conditioned spaces—offices, factories, process rooms, processes, research and test laboratories, packaging or storage rooms. You can gain ...

Increased Efficiency and Output of Workers by keeping each room or department at its proper temperature.

Cuts Heating Costs up to 25%—23% fuel savings reported by E. R. Squibb & Sons. With today's higher fuel costs bigger savings than ever before are possible with Powers control. It eliminates fuel wasted by OVER-heating with manual operation.

Precision Control for Processes—Wherever product uniformity and quality are dependent upon precise temperature and humidity regulation use Powers controlling, indicating or recording instruments.

Phone or Write Powers Nearest Office for aid in selecting the type of automatic control that will give best results for your requirements. There's no obligation. Powers control systems can be installed in existing as well as new buildings.

Some Prominent Users of Powers Control:

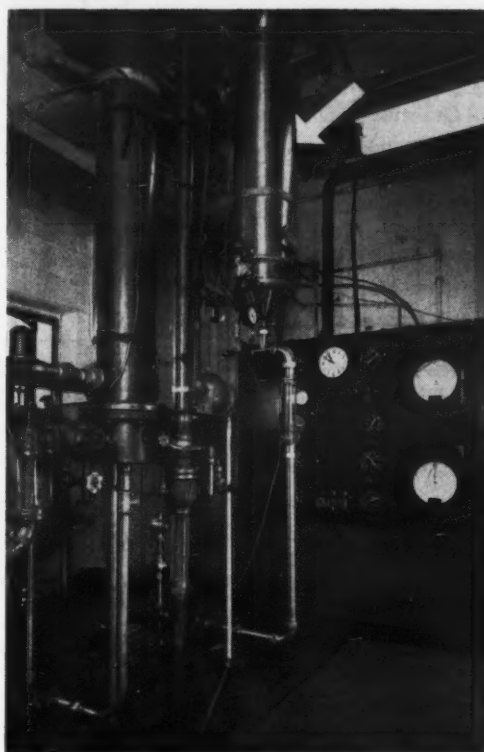
Ford Motor Co.
Chrysler Corp.
Esso Research Center
Sears Roebuck & Co.
Bendix Aviation Corp.
Goodrich Tire & Rubber Co.
Eastman Kodak Co.
Pepperell Mfg. Co.
Armour & Co. • Swift & Co.
Bachmann Uxbridge Corp.
Monsanto Chemical Co.
U. S. Capitol Bldg.
M.I.T. and Harvard Univ.
N. Y. Stock Exchange



THE POWERS REGULATOR CO.

Skokie, Ill. • Offices in Over 50 Cities, see your phone book.

OVER 60 YEARS OF TEMPERATURE AND HUMIDITY CONTROL

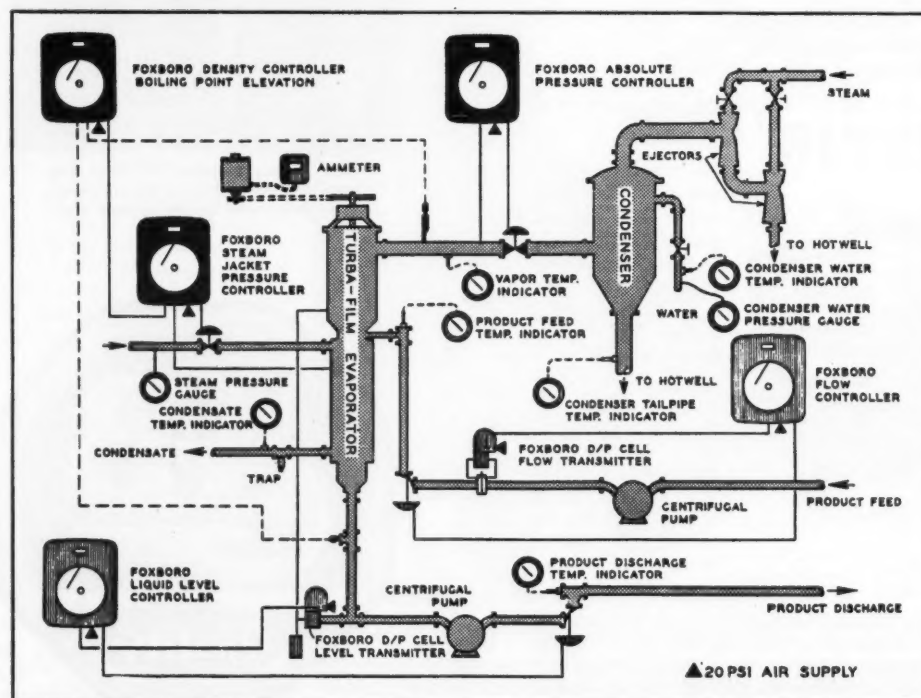


Rapid operation of evaporator (arrow) makes controlled operation necessary, but . . .

interlocked controls

hold specific gravity within ± 0.002

Novel design of the Turba-Film evaporator allows it to concentrate heat-sensitive, viscous, or foaming materials. Thin film of feed material is created on lower heated section and an entrainment separator and foam breaking section is situated above the heat transfer area. In all, design leads to a rapid pass to concentrate feed. It also leads to operation that is sensitive to changing variables, but three



Action of three controllers (shown in solid black) is interlocked

When inquiring check CP 1604 on handy form, pgs. 2-3

controllers can be used to hold concentrate specific gravity steady.

In concentrating sugar solution, for example, it has been found possible to hold output specific gravity to better than ± 0.002 . Because such close control is desirable, control action is based on an accurate measurement of boiling point rise.

Temperature comparison is made between product and vapor temperature. Short cooling tube in the vapor line removes superheat. Resistance thermometer bulb in this section produces a reading which is compared to reading of bulb in the product discharge line. These two measurements are brought together in a density controller and continuously recorded as boiling point elevation.

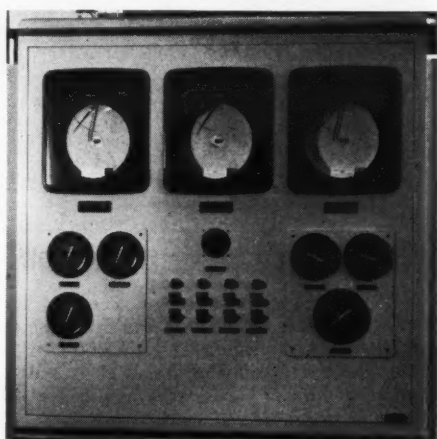
Though boiling point rise is, in some cases, quite small, it can be related to density of finished product. Actually, however, relationship of boiling point rise and density is a function of absolute pressure. For this reason an absolute pressure controller is applied to the system. Resultant small changes in pressure have no observable effect.

In order to hold density at selected value, density controller adjusts pressure of steam in the jacket of heated section. Temperature change produced in this way controls evaporation rate — since time for passage of liquid is constant.

Action of the absolute pressure controller is to set vapor withdrawal rate by means of a valve in the line to system's condenser. Alternative methods for the same thing are controlled air bleed and controlled cooling water rate to the condenser. Both of these alternatives, however, lack flexibility compared with this vapor-line valve arrangement.

Furthermore, vapor-line valve scheme can hold absolute pressure to better than 0.05 psi — a figure responsible for satisfactory overall control of unit. Constant feed rate is attained by governing pump speed. Even so, it is helpful to use a fourth controller to hold this flow steady. Record of flow is useful for accounting, too. Last major instrument in this setup is a liquid level controller which

(Continued on next page)



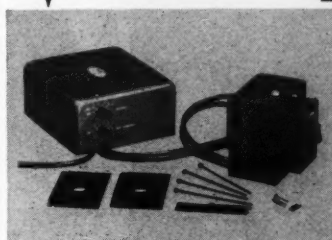
Instrumentation for evaporator control is built in package unit

Beckman Accessories for the

give you a
**MULTI-PURPOSE
ANALYTICAL TOOL**

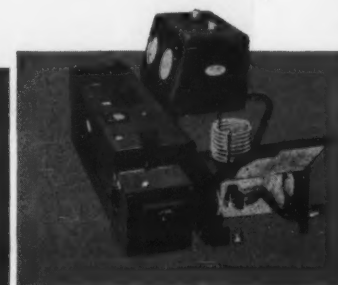
MODEL DU PHOTOMULTIPLIER

The Photomultiplier Attachment increases the sensitivity of the DU many times, making it invaluable for measuring low-intensity radiation such as emission of weakly emitting elements in flame photometry, and low levels of fluorescence.



REFLECTANCE ACCESSORY

The reflectance Accessory adapts the Model DU for precision measurements of diffuse reflectance in quantitative color analysis of opaque solids, powders, and liquids.



FLAME ATTACHMENT

Measurement of flame emissions give precise qualitative and quantitative analysis of metallic elements in a fraction of the time required by other spectrochemical methods. Modern Beckman Flame instruments detect 60 elements, 30 of them to 1 ppm or better.

Other
Accessories
include the
following...

THE ULTRAVIOLET ACCESSORY SET extends the DU's range into the very useful ultraviolet region, making its total range 220 to 1000 mμ.

THE FLUORESCENCE ACCESSORY SET makes

possible extra-sensitive measurement of fluorescence, turbidity or light scattering power of a solution. **THE**

50-CENTIMETER CELL permits flow or static measurements on dilute solutions or weakly absorbing samples.

THE THERMOSPACER permits temperature control of samples from 0° to 100°C. **THE BATTERY POWER REGULATOR** provides the convenience of line operation.

Obtain more information about these and other Beckman accessories for the Model DU Spectrophotometer by writing for Data File 40-11



division

BECKMAN INSTRUMENTS, INC.
FULLERTON 1, CALIFORNIA

When inquiring check CP 1605 on handy form, pgs. 2-3

FOR HIGH PRESSURES, TOO!

MASONEILAN

Level Controllers Rated Up to 2500 lb ASA

Mason-Neilan offers 14" and 32" range 12000 Series Controllers, in all flanged external chamber models, rated at 1500 and 2500 lb ASA. Cast carbon steel chambers are normally supplied, but other castable, weldable materials are also available.

For side connections, bosses are provided and located for flexibility in meeting mounting requirements. Standard side connections are welding neck flanges welded to the bosses. Other types such as high pressure lens ring and welding ends may also be used.

The location of the bosses provides for four instrument orientation positions. Since these chambers are of the integral type (12000W Series) orientation must be predetermined and specified.

Complete details on these and other Masoneilan Level Controllers will be sent you on request.

ALL HIGH



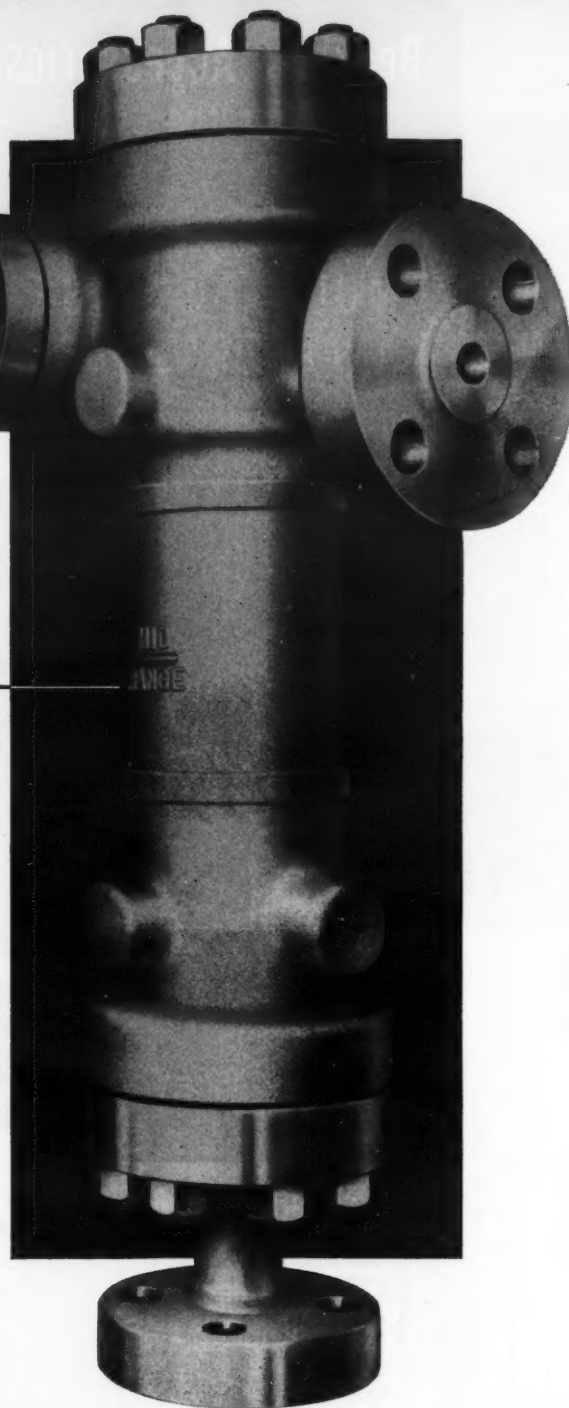
PRODUCTS

MASON-NEILAN REGULATOR CO.

1203 ADAMS STREET, BOSTON 24, MASS., U. S. A.

Sales Offices or Distributors in the Following Cities: New York • Syracuse • Chicago • St. Louis • Tulsa • Philadelphia • Houston • Pittsburgh • Atlanta • Cleveland • Cincinnati • Detroit • San Francisco • Boise • Louisville • Salt Lake City • El Paso • Albuquerque • Odessa • Charlotte • Los Angeles • Corpus Christi • Denver • Appleton • Birmingham • New Orleans • Dallas • Seattle • Mason-Neilan Regulator Co., Ltd., Montreal and Toronto

When inquiring check CP 1606 on handy form, pgs. 2-3



INSTRUMENTATION

(Continued from preceding page)

governs withdrawal of concentrate. Accessory instruments include pressure and temperature indicators, and an ammeter to show loading on motor which drives evaporator's rotor.

Entire instrumentation for Turba-Film control is built in a package unit. Cold-rolled steel panel is rugged, dust-proof, and ready to connect to equipment.

(Evaporator control system is built by The Foxboro Co., Dept. CP, 85 Neponset Rd., Foxboro, Mass. . . or for more information check CP 1607 on handy form, pages 2 and 3.)

(Turba-Film evaporator is a development of Rodney-Hunt Machine Co., 32 Vale St., Orange, Mass. . . or for more information check CP 1607A on handy form, pages 2 and 3.)

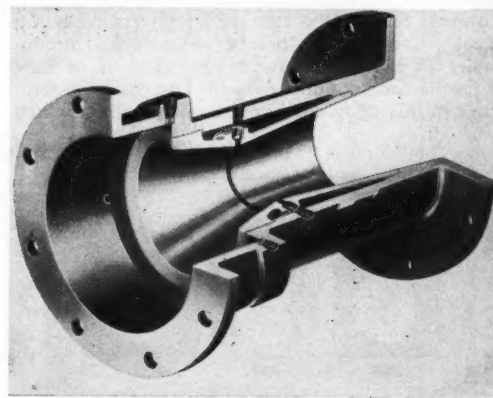
Meters flow of gases or liquids with minimum head losses in 6 to 24" pipelines . . .

units will handle corrosive liquids and gases under pressures to 250 psi

Uses: Flow tube can meter water, air, and other gases, and fluids which contain no settleable solids. Special alloys and coatings are available for corrosive solutions and gases.

Features: Unit produces negligible loss of head. Head losses range from 2.5 to 9% of differential pressure depending on flow tube capacities.

Description: Dall flow tube consists of flanged cylindrical body with short, straight inlet section terminating with abrupt decrease in diameter (in-



Flow tube gives up to 98% recovery of differential pressure

let shoulder). Conical restriction and diverging outlet separated by narrow annular gap (slotted throat annulus) produce pressure differential as material flows through unit. Tubes are available for 6 to 24" diameter pipelines.

Working pressures are 175 psi for 6 to 12" tubes, 150 psi in sizes 14 to 24". Extra heavy tubes can

INSTRUMENTATION

be supplied in working pressures to 250 psi. Flow tube capacities (water at 60°F) range from 450 to 31,000 gpm maximum.

(Dall Flow Tubes are a product of Builders-Providence, Inc., Div. of B-I-F Industries, Inc., Dept. CP, 345 Harris Ave., Providence 1, R.I. . . . or for more information reader may simply check CP 1608, pages 2 and 3.)

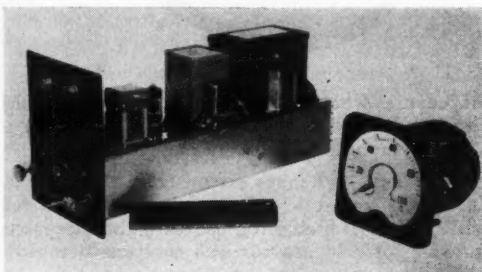
Amplifies output of strain gage or pressure cell for signals to AC voltmeter . . .

unit incorporates built-in regulated power supply and high mu twin triode tube

Uses: For amplifying electrical output of resistance wire strain gages or pressure cells to operate AC voltmeters having 5-volt scale.

Features: Amplifier operates on 115v, 60 cy AC through built-in regulated power supply and uses high mu twin triode tube. With proper voltmeter, accuracy to within 1 or 2% is possible.

Description: Panel mounted units or single and multiple units in cases are available. Operating panel is approx 6 x 7" with overall chassis length



Amplifier is available as panel-mounted or cased unit

of 15". Screw adjustments for capacity balance, resistance balance and calibration are provided.

(Amplifiers are a product of Baldwin-Lima-Hamilton Corp., Dept. CP, 940 Simpson St., Philadelphia 42, Pa. . . . or for more information check CP 1609 on handy form, pages 2 and 3.)

AUTOMATION — What does it mean?

In his guest editorial in this issue, instrumentation-automation expert A. F. Sperry helps to clear up some thinking that may have grown fuzzy. His views on much-talked-about automation are MUST reading for technical men specializing in instrumentation. (Pages 6-7.)

Testing with variable A-C Voltage?



THE OLD WAY:

- Collect 1. A variable transformer
2. A voltmeter
3. Connection leads and then connect

THE NEW WAY: Get all at once in a

VOLTBOX A-C POWER SUPPLY

Here's your variable a-c voltage test gear all ready in a compact, cast-aluminum, portable unit that includes:

- A POWERSTAT variable transformer
- A direct reading voltmeter
- Three output receptacles
- Two Superior 5-WAY binding posts
- An "on-off" switch and line-load meter switch
- A renewable fuse and 6-foot cord-plug.



VOLTBOX TYPE UC1M
PRICE: \$53.00

Save your own valuable time and do a better job with a VOLTBOX a-c power supply.



See the Superior Electric's Mobile Display when in your area.

Four types of VOLTBOXES to meet your needs:

Type	Input Volts	Frequency	Output Voltage Range	Output Current (Amps.)
UC1M	120	50/60	0-140	7.5
UC2M	240	50/60	0-280	3.0
U-2000	120	50/60	0-140	20.0
U-2400	240	50/60	0-280	9.0

THE SUPERIOR ELECTRIC COMPANY

808 CLARKE AVENUE, BRISTOL, CONN.

Manufacturers of: Powerstat Variable Transformers • Stabiline Automatic Voltage Regulators • Voltbox A-C Power Supplies • Powerstat Light Dimming Equipment • Varicell D-C Power Supplies • Superior 5-Way Binding Posts

THE SUPERIOR ELECTRIC CO.
808 Clarke Ave., Bristol, Conn.

Please send full details on VOLTBOX a-c power supplies.

Name

Position

Company Name

Company Address

City.....Zone.....State.....

When inquiring check CP 1610 on handy form, pgs. 2-3



SIGNAL TRANSMISSION

... a vital contribution to complete automation

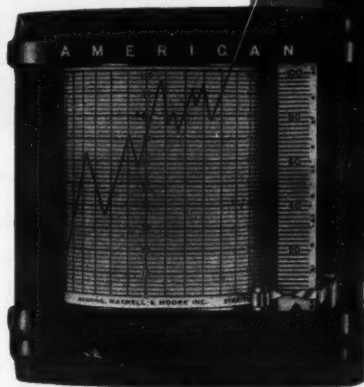
Only the AMERICAN-MICROSEN PROCESS CONTROL SYSTEM incorporates this engineering achievement.

DC TRANSMISSION of process information is the greatest compatibility factor for complete automation—since most electronic print-out, monitoring and computing devices use DC in their measuring circuits. The simple two-wire DC communication lines are unaffected by induced alternating currents and varying line resistance.

The American-Microsen Process Control System, with DC transmission of process measurements, makes it practical to use automatic equipment for (1) continual digital tabulation of operational data; (2) "electric nerve center" supervision of all measured criteria to assure maximum safety and efficiency; (3) precise high-speed, low-cost accounting and engineering analysis leading eventually to the ultimate in automation—fully-automatic product analysis and control.

Instantaneous DC signal transmission permits higher controller gains—creates a new concept of control performance. It offers the *improved quality of control* so important in reducing the size of process equipment and capital investment for a given through-put.

The all-encompassing advantages of the American-Microsen Process Control System assure the highest reliability of instrument performance, minimum maintenance and the utmost in flexibility—all vital to the economical operation of the ultra modern plant of today and the standard plant of tomorrow. Your inquiry is invited. Write for Catalog 164.



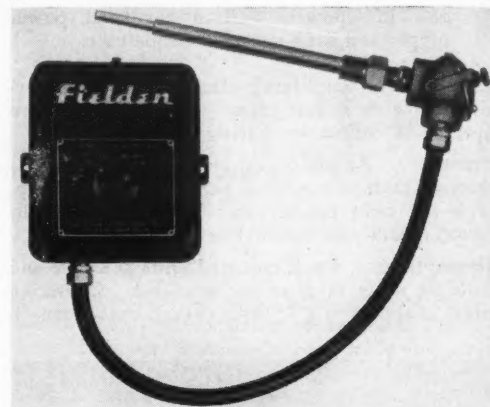
INSTRUMENTATION

Uses high gain feed back to amplify low level DC signals . . .

null balance amplifier has high input impedance when used with voltage inputs

Uses: Converts low level DC microamp or millivolt inputs to high level DC output. Unit may be used to amplify signals from thermocouples, resistance thermometers, strain gages, and similar instruments.

Features: Amplifier incorporates high gain feed back loop. Null balance unit has high input



impedance when used with voltage inputs and draws no current from source. Where input is current, input impedance is negligible.

Description: Ranges extend from 5 mv and 20 microamp full scale. Output is 4 milliamp full scale. Units suitable for use with thermocouples provide for cold junction and compensation.

(Amplifier is a product of Fielden Instrument Div., Robertshaw-Fulton Co., Dept. CP, 2920 N. 4th St., Philadelphia 33, Pa. . . or for more information reader may simply check CP 1612 on the convenient Reader Service slip which is located between pages 2 and 3.)

Uses concentric reflecting prisms to show liquid level as black line . . .

can be installed on float valves to show position of float and liquid level

Uses: Designed to economically provide check on liquid level in surge drums, receivers, fractionating columns, and other pressure vessels. Also, unit may be used to show position of float and linkage in float valves.

Features: Simple design of "Level Eye" consists of lens, retainer, tubular lens mounting, and compression gaskets. Heat-tempered glass lens with series of concentric reflecting prisms on



AMERICAN MICROSEN INDUSTRIAL INSTRUMENTS

A product of **MANNING, MAXWELL & MOORE, INC.** STRATFORD, CONN.
MAKERS OF 'AMERICAN' AND 'AMERICAN-MICROSEN' INDUSTRIAL INSTRUMENTS, 'HANCOCK' VALVES
'ASHCROFT' GAUGES, 'CONSOLIDATED' SAFETY AND RELIEF VALVES, AIRCRAFT PRODUCTS.
BUILDERS OF 'SHAW-BOX' AND 'LOAD LIFTER' CRANES, 'BUDGIT' AND 'LOAD LIFTER'
HOISTS AND OTHER LIFTING SPECIALTIES.

When inquiring check CP 1611 on handy form, pgs. 2-3

INSTRUMENTATION

liquid side of glass reflects light where there is no liquid but appears black when liquid is behind glass.

Description: Indicator is suitable for installation on tanks or piping systems operating at temperatures from -50°F to 250°F and hydraulic pressures to 300 psig. Special units are available for higher pressures. Lucite frost shield is inserted over glass to keep it frost-free. Transparent lens is also offered by manufacturer. Mounting two transparent indicators on opposite sides of tank or pipe line permits operator to see reflection of liquid level when it is above or below height of the lens. This arrangement can also be used to check gas-liquid ratio in flowing lines.

Housing for indicator has $1\frac{1}{2}$ " glass face and mates with pipe of same diameter. Unit is available with male threads or with provision for welding into place. Two lengths are made — standard and longer length to extend through insulation cover on low temp pressure vessels, pipes.

("Level Eye" indicators are products of H. A. Phillips Co., Dept. CP, 3255 W. Carroll Ave., Chicago, Ill. . . . or for more information check CP 1613 on handy form, pages 2 and 3.)

Folder describes, illustrates portable X-ray unit

Folder describes portable self-contained industrial X-ray unit. Illustrated with number of photos, literature explains X-ray head, controls, and other features of unit. Application data is useful in radiographic examinations of stressed components, welds, frames, castings, steel structures, pipelines, ceramics, and plastics.

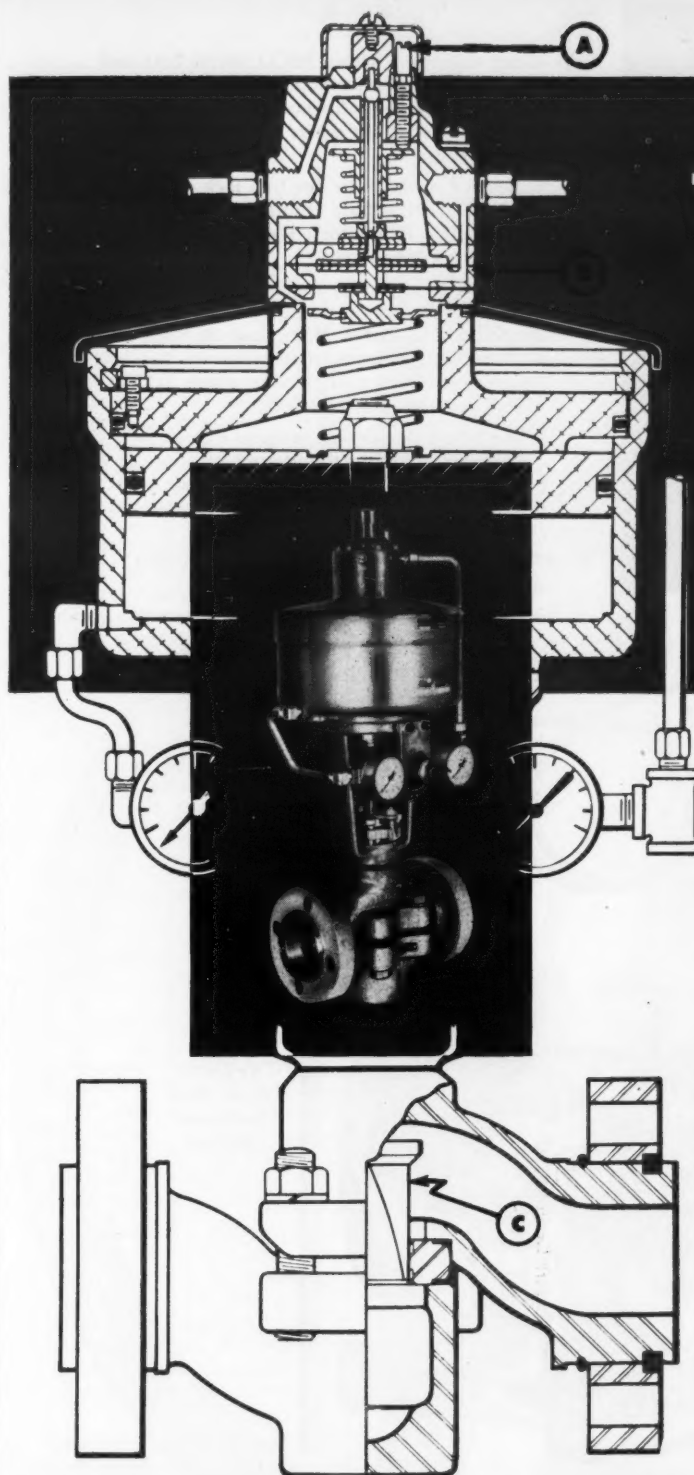
Folder titled "Norelco MG 160" is issued by Research & Control Div., North American Philips Co., Inc., Dept. CP, 750 S. Fulton Ave., Mount Vernon, N. Y. When inquiring specify CP 1614 on handy form, pages 2 and 3.

Need instrumentation for that process? . . .

You'll find just what you need in the alphabetized, itemized Product Directory on pages 198 to 201. All subjects and products presented in ads and editorial columns are there.



Unit shows black when liquid is behind glass



TOPWORKS

"TOPS"

CONTROL VALVES

Ingenious pneumatic piping arrangement and exclusive positioner design, permits opening or closing of valve on air failure with either direct or reverse action Conoplug.

Most control engineers agree on the advantages of single-seated valves for today's demanding process applications. But in order to successfully operate single-seated valves it is necessary to have better than average topworks . . .

Hence, the revolutionary CYLINDER CONOMOTOR. . . 10 to 20 times more POWER than conventional spring motors . . . SPEED of response 5 to 10 times faster than diaphragm motors . . . 50% reduction in WEIGHT per unit of delivered power . . . 30% reduction in SPACE requirements . . . STABILITY and positioning ACCURACY unmatched by conventional spring-and-diaphragm or springless diaphragm motors.

The combination of the Cylinder Conomotor with the unique single-seated split body gives industry, for the first time, a fully coordinated valve design. Conomotor Series LB Control Valves meet all of industry's rigorous requirements.

WRITE FOR CATALOG LB-1.

CC401

CONOFLOW CORPORATION

FOREMOST MANUFACTURERS OF FINAL CONTROL ELEMENTS
2100 ARCH STREET, PHILADELPHIA 3, PA.

When inquiring check CP 1615 on handy form, pgs. 2-3

Guaranteed TO SHUT TIGHT*

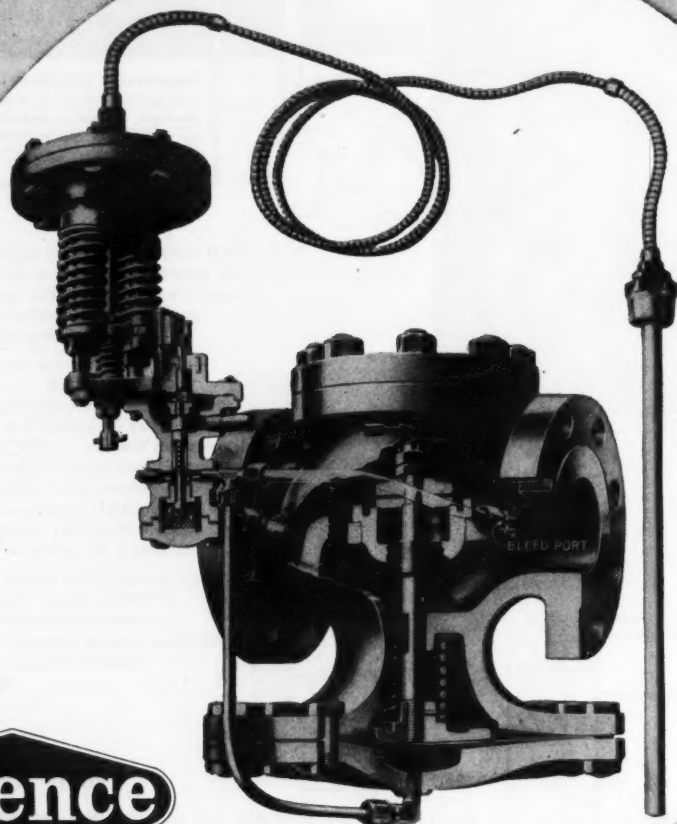
*When equipped with a SECO Metal Seat and Disc on steam service and protected by an approved Strainer, a Spence Regulator is guaranteed to shut tight when the demand for steam ceases.

Expensive steam leaks due to a lack of absolutely tight shutoff are eliminated in Spence Temperature Regulators. Here is why we can make such a guarantee:

First, our temperature regulators are of the single seat design. Seats and discs are made of durable SECO Metal. More than 20 years experience in thousands of installations has failed to produce a single case where SECO Metal has been cut by steam.

These plus other design features explain why Spence Temperature Regulators function dependably and accurately year after year without requiring expensive repairs or special attention.

Want more facts? Write for Bulletin T50 giving full details.



SPENCE
TYPE ET150
Temperature
Regulator

Spence

**SPENCE ENGINEERING
COMPANY, INC.**
WALDEN, NEW YORK

When inquiring check CP 1616 on handy form, pgs. 2-3

INSTRUMENTATION

Reading and changing of charts simplified by centerless pointer on recording controller . . .

AC bridge and potentiometric recorders operate electric or pneumatic controls

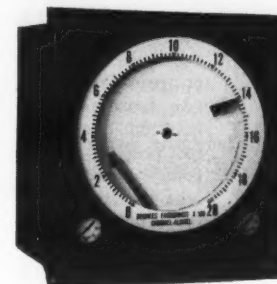


Chart has internal illumination

Uses: For continuous recording and controlling of systems using air or electric controls.

Features: Increased chart readability and simplified chart changing is achieved by use of bold centerless pointer which "floats" around circumferential scale.

Description:

Potentiometric recording system uses magnetic standard which eliminates slidewire resistor, standard chemical cell, dry-cell, standardizing mechanism, and moving contacts in slidewire and standardizing mechanism. Instrument is fail-safe and operates at ambient temperatures as low as 0°F.

AC bridge recorder-controller uses servo amplifier and motor to keep bridge circuit balanced.

Two pneumatic-control forms available with instrument are proportional — plus reset and proportional-plus reset-plus rate control action. As electric contact controllers, they provide on-off, two-position, three-position, and floating control through variety of switching arrangements using snap-action mechanical switches.

	POTENTIOMETER	AC BRIDGE
ACCURACY		
12 mv span	±0.25% scale span
<12 mv span	±0.03 mv
minimum span	2.5 mv
200° F or greater	±0.25% full scale
<200° F span	±0.5° F
PEN SPEED		
Recorders	4, 12, or 24 sec full scale
Controllers	12 or 24 sec full scale
CHART SPEED	24, 12, 8, 4, or 1 hour	7 days
SENSITIVITY		
	varies from 0.03% to ±0.003% full scale or . . .	200° F scale span or greater —
	±0.003 to ±0.007 mv (depending on pen speed, range)	±0.03% full scale
		200° F span —
		±0.06° F

Charts for instruments are 12" in diameter with 4-9/16" calibrated width. Concentric scale with centerless pointer is 31-3/8" long by 1-3/4" wide. Nominal power supply is 120v 60 cy. DC potentiometer uses 65w and AC bridge, 40w.

(Recording controllers are a product of the Meter and Instrument Dept., General Electric Co., Dept. CP, 1 River Rd., Schenectady 5, N.Y. . . . or for more information check CP 1617 on handy form, pages 2 and 3.)

Tempilstiks®

*the amazing
Crayons
that tell
temperatures*



A simple method of controlling temperatures in:

- WELDING
- FLAME-CUTTING
- TEMPERING
- FORGING
- CASTING
- MOLDING
- DRAWING
- STRAIGHTENING
- HEAT-TREATING

*Also
available
in pellet
and
liquid
form*

It's this simple: Select the Tempilstik® for the working temperature you want. Mark your workpiece with it. When the Tempilstik® mark melts, the specified temperature has been reached.

\$2
each

gives up
to 2000
readings

Available in these temperatures (°F)

113	263	400	950	1500
125	275	450	1000	1550
138	288	500	1050	1600
150	300	550	1100	1650
163	313	600	1150	1700
175	325	650	1200	1750
188	338	700	1250	1800
200	350	750	1300	1850
213	363	800	1350	1900
225	375	850	1400	1950
238	388	900	1450	2000

FREE —Tempil® "Basic Guide to Ferrous Metallurgy" — 16 1/4" by 21" plastic-laminated wall chart in color. Send for sample pellets, stating temperature of interest to you.

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SERVICE**

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Thermocouple Supplies • Industrial Furnaces & Ovens
Pyrometers & Controls • Metallurgical Testing Machines
Dept. 19 • 3000 South Wallace St., Chicago 16, Ill.
Dept. 19 • 2035 Hamilton Ave., Cleveland 14, Ohio

When inquiring check CP 1618 on handy form, pgs. 2-3

INSTRUMENTATION

**Turbine sensing element
measures fluid flow
at high pressures**



Uses: Measures fluid flow rates from 0.3 to 3000 gpm under difficult conditions such as high temperatures, severe shock and vibration, or high pressures.

Features: Design permits accuracies to 0.5% at pressures to 3500 psi and temperature range from -300 to 800°F.

Description: Fluid flow drives freely-spinning turbine wheel which generates pulses in externally-mounted magnetic coil. Pulse frequency is measure of flow rate; total number of pulses measures total volume. To indicate, record, or totalize fluid flow, either electronic counters or DC instruments may be used. Transient response up to 100 cycles per second is available. Range between maximum and minimum flow varies from 6 to 1 for 3/8" pickup to 40 to 1 in larger sizes.

(Flow pickups are a product of Waugh Engineering Co., Dept. CP, 15306 Dickens St., Sherman Oaks, Calif. . . or for more information check CP 1619 on handy form, pages 2 and 3.)

**Reference handbook explains
precision potentiometers**

Reference handbook contains 207 pages and 189 illustrations, and is divided into 13 technical sections. First three sections describe precision potentiometer terms and illustrate potentiometer components. Potentiometer performance characteristics such as linearity, conformity, resolution, noise, power rating, frequency response, corrosive effects, mechanical acceleration, and operating life are treated in sections 4-7.

Sections 8, 9, and 10 deal with design, construction, and performance of both linear and non-linear instruments. Methods of mounting and ganging potentiometers are covered in Section 11. Special design potentiometers (multi-turn, slide wire, translatory, and differential) are covered in Section 12. Bibliography of technical publications treating potentiometers is in Section 13.

To obtain "TIC Potentiometer Handbook" remit \$2 to Technology Instrument Corp., Dept. CP, 531 Main St., Acton, Mass. When inquiring specify CP 1620, pages 2 and 3.

For more information on product advertised at right, specify CP 1621 . . . see information request blank between pages 2 and 3.

PANALARM "50"

OPENS THE DOOR

TO MORE DEPENDABLE ANNUNCIATOR PERFORMANCE

WITH NEW "INSTRUMENT-TYPE" CONSTRUCTION

LOOK inside the new Universal PANALARM "50". You will realize that here, at last, is an annunciator system built for long term dependability and service. Built to match the responsibility an annunciator must assume in your plant.

The PANALARM "50" Cabinet has a substantial hinged door . . . with sub-door to allow easy access to signal lamps. It has a new, rugged chassis design . . . pre-wired to handle any standard audio-visual signal requirement . . . and so flexible that signal sequences can be changed by simple terminal connections. No re-wiring is needed.

All moving parts and contacts of the PANALARM "50" are within hermetically sealed, plug-in units. They are corrosion-proof and suitable for Class I, Div. 2 locations. All connections are made to a single terminal block . . . with ample space for wiring.

SEND FOR COMPLETE 40-PAGE MANUAL

Ask for Catalog 100-1

PANALARM PRODUCTS, INC.

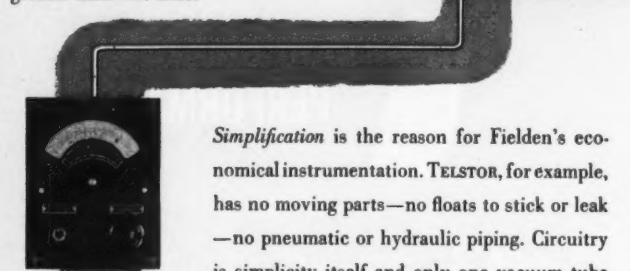
7409 N. Hamlin Ave., Skokie, Illinois



must you pay a premium price for accurate instrumentation?

fielden says, "no!"—

with precise yet sensibly priced instruments like this TELSTOR Electronic Level Indicator. TELSTOR measures continuously—with accuracies to $\pm 2\%$ —the levels of liquids, viscous fluids, powders or granular solids. Remote readings can be recorded at distances greater than one mile.



Fielden TELSTOR Electronic Level Indicator—accurate, continuous measurement of liquids or divided solids.

Simplification is the reason for Fielden's economical instrumentation. TELSTOR, for example, has no moving parts—no floats to stick or leak—no pneumatic or hydraulic piping. Circuitry is simplicity itself and only one vacuum tube is employed. Measuring electrode and instrument are easily installed.

Unless you really need instrumentation of extreme precision (which inevitably costs more) get the facts about Fielden. *Simplified* Fielden instrumentation assures *all the accuracy you can use*—at an extremely worthwhile saving in initial cost and maintenance.

DOLLAR FOR DOLLAR—YOUR BEST INSTRUMENT VALUE



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INSTRUMENT DATA TODAY.

FIELDEN INSTRUMENT DIVISION
2920 N. 4th St., Dept. G, Philadelphia 33, Pa.

Send full details of Fielden simplified ☐ TELSTOR Electronic Level Indicator ☐ TEKSTOR Electronic Level Control ☐ TEKTOLOG Electronic Recorder.

Name _____

Title _____

Company _____

Address _____ City _____ State _____



When inquiring check CP 1622 on handy form, pgs. 2-3

INSTRUMENTATION

Swing-check control valve closes against line flow without hammer effect

Uses: Designed as a check valve for use on water, gas, or chemical lines. Units have been used on fire protection lines as deluge or sprinkler valves. Other uses include installation on gas and anhydrous ammonia lines.

Features: Valve closes rapidly without line shock or water hammer effect. Unit may be controlled by solenoids, fusible elements, fixed temperature, or rate-of-rise controls.

Description: Small stop cock on line to piston chamber controls swing-check valve. When cock is open, release of pressure in piston chamber permits piston to rise and disc to open. Closed cock causes buildup of pressure in chamber forcing disc to close against line flow. Speed of opening or closing may be regulated from less than one second to any specified time lag.

Piston valves are rated at 250 psi and are made of M-Bronze, cast iron, or steel alloys. Designed for use on 2" lines, valves may be mounted in any position.

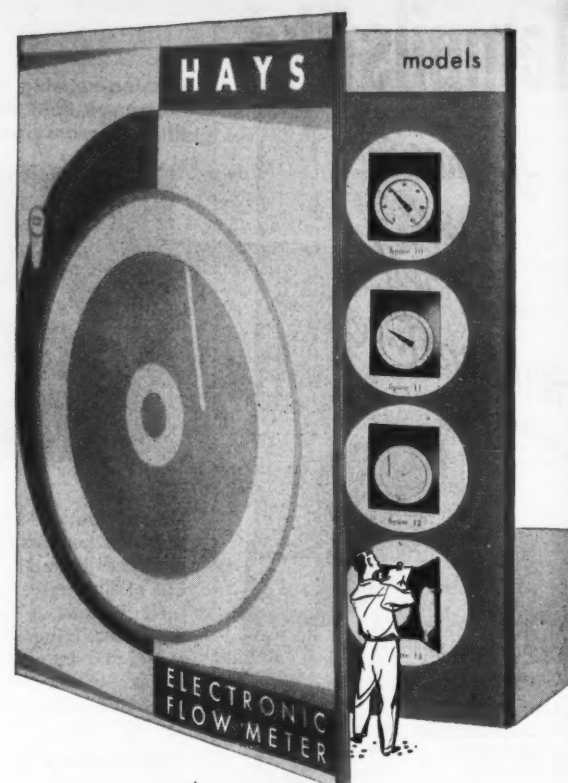
(Control valves are a product of McRae Corp., Dept. CP, 621 S. Spring St., Los Angeles 14, Calif. . . . or for more information check CP 1623 on handy form, pages 2 and 3.)

Line voltage, current checked at outlets under loads . . .

when device is used with
snap-around volt-ammeter

Uses: Designed for measurement of line voltage at outlet while appliance is connected to line. Accessory to snap-around volt-ammeter also serves as "split" plug to divide double-conductor line cords at outlet for ammeter reading. It increases split-core ammeter sensitivity by ten times for precise readings on small appliances and fractional hp motors.

Features: Heavy duty construction increases capacity of device to 25 amp for direct readings and 10 amp for 10x sensitivity readings.



a guide to better flow metering

Here's a new fact-filled, technical booklet that tells you feature for feature how the new Hays electronic flow meter excels.

Electronic operation—provides maximum accuracy ($\frac{1}{4}\%$ of full scale differential), and speed (4 seconds for full scale pen travel).

Mercuryless transmitters—rupture-proof metallic bellows for differential pressure measurement.

Continuous integration—motor-driven, continuous mechanical integrator is extremely accurate even on rapid load changes.

Other features include powerful motor, easy readability, accuracy unaffected by normal temperature changes, optional explosion and weather-proof transmitter.

Write now for bulletin 54-1074-222 and get the important facts.

Automatic Combustion Control
Boiler Panels • CO₂ Recorders
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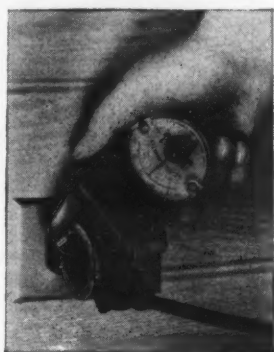
MICHIGAN CITY, 12 INDIANA

When inquiring check CP 1624 on handy form, pgs. 2-3

CHEMICAL PROCESSING

INSTRUMENTATION

Description: Unit is plugged directly into ordinary outlet. Motor or appliance line cord is plugged into one of two current-reading positions: direct ampere reading or 10x sensitivity. Current reading is taken by snapping



Gives direct or 10x readings of current

jaws of volt-ammeter through energizer ring. Voltage readings are taken by plugging test leads into voltage receptacles on energizer.

(Energizers are manufactured by Pyramid Instrument Corp., Dept. CP, 630 Merrick Rd., Lynbrook, N. J. . . . or for more information check CP 1625 on handy form, pages 2 and 3.)

Describes Venturi tubes for small pipes

Schematic drawing and photographs of miniature Venturi tubes are included in five-page brochure. Tube inlets range from 1/2 to 2". Brochure gives limitations of applications, discharge capacities, and other pertinent data.

Bul on Type TF Venturi Tubes is issued by Simplex Valve & Meter Co., Dept. CP, 68th & Upland Streets, Philadelphia 42, Pa. When inquiring check CP 1626 on handy form, located between pages 2 and 3.

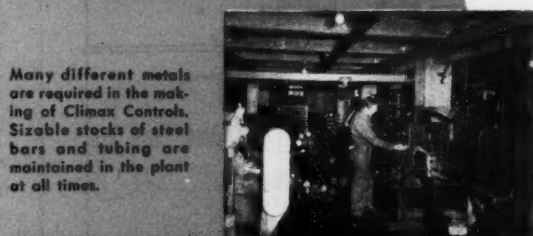
For more information on product at right, specify CP 1627 . . . see information request blank between pages 2 - 3.



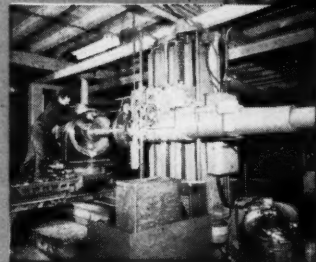
Here in our Tulsa plant, home of Climax Controls, the Product Development Group translates new concepts of automatic control into final engineering drawings for equipment to meet the precise requirements of tomorrow's Process Industries.

Here's Why BS&B CLIMAX CONTROLS give such *Outstanding Performance!*

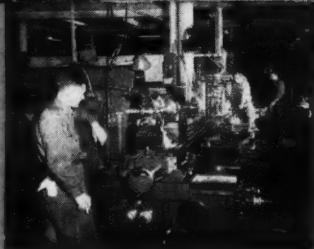
Only the most advanced engineering and design...the most modern manufacturing equipment and methods...the most exhaustive test procedures...and years of practical experience and "know-how" in the industry can combine to produce controls of the quality, precision, long life, efficiency and reliability that you get in Climax! The excellence of BS&B Climax Controls has gained for them a world-wide reputation—for nowhere in the world will you find a better line of automatic process controls...or a company which takes more care and pride in their manufacture! When next you need control equipment for a new installation or for replacement purposes, be sure to specify BS&B Climax...you'll be glad you did!



Many different metals are required in the making of Climax Controls. Sizeable stocks of steel bars and tubing are maintained in the plant at all times.



A large investment in highly specialized equipment is required to enable us to manufacture Climax Controls in a full range of types and sizes, from the smallest to the largest.



Our skilled machinists and craftsmen take great pride in their ability to turn out consistently fine quality precision work to the customer's most exacting tolerances.



When required, finished parts are heat treated in these precisely controlled electric annealing furnaces—some of the most modern of their kind anywhere in the world.



To assure maximum on-the-job efficiency, every Climax Control must pass rigorous operating tests in one of the industry's most modern hydraulic and experimental laboratories.



BLACK, SIVALLS & BRYSON, INC.

Climax Controls Division, Dept. 4-M8

7500 East 12th Street

Kansas City 26, Missouri

The key to its reliability is its ability to hold oil samples within .02°F. (.01°C) at temperatures ranging between 60° and 220°F (15.5-104.4°C). Fisher achieves this with a completely new thermostated circulating bath encasing the standard saybolt tubes.

FISHER SCIENTIFIC CO.
717 Forbes St., Pittsburgh 19, Pa.

Please send me Booklet FS-209-HH which describes
Fisher/Tag Saybolt Viscosimeter and other petroleum
testing equipment.

Name _____ Title _____
Company _____
Street _____
City _____ Zone _____ State _____

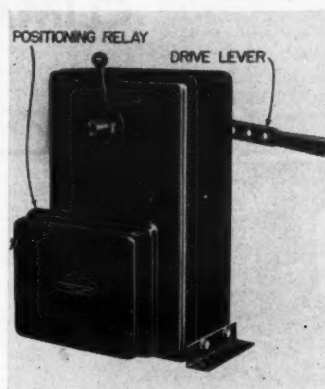
Boston	Cleveland	Philadelphia	Washington
Buffalo	Detroit	Pittsburgh	Montreal
Chicago	New York	St. Louis	Toronto

When inquiring check CP 1628 on handy form, pgs. 2-3

**Air-operated control
takes little space
for mounting . . .**

Uses: Designed for operating butterfly valves, dampers, feeders, and similar equipment with pneumatic control signal.

Description: Pneumatic signal actuates positioning relay which in turn accurately positions piston-operated drive lever arm. Three different characteristic

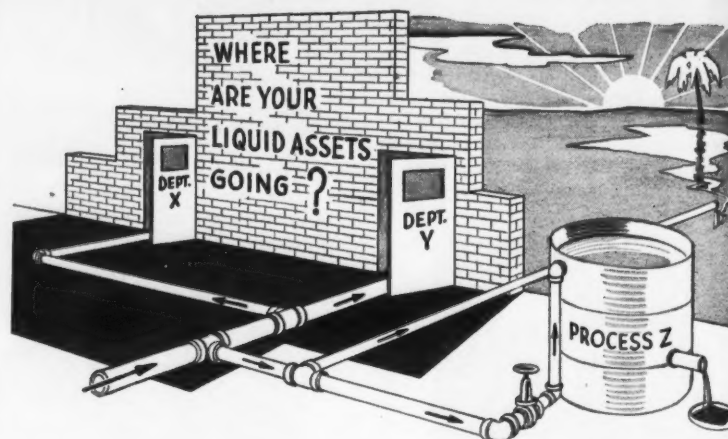


cams are supplied and may be shaped if necessary. Time required for full travel is adjustable. Drive has 4-inch piston stroke at torque of 75 ft-lb and operates on standard SAMA signal ranges of 3-15 and 3-27 psi.

(Control drive is a product of Bailey Meter Co., Dept. CP, 1050 Ivanhoe Rd., Cleveland 10, Ohio . . . or for more information check CP 1629, pages 2 & 3.)

Catalog of 190 pages gives complete listing of industrial, electrical and electronic meters and controls.

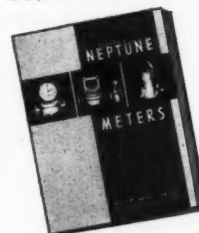
Cat 54 is issued by Electro-Tech Equipment Co., Dept. CP, 308 Canal St., New York 13, N. Y. When inquiring specify CP 1630, pgs. 2 & 3.



Here's a Simple Way to Reduce the Cost

Best way to cut these costs? Put Neptune water meters at every key point. Get water out of overhead and charge it fairly and squarely against each department or process. What stronger incentive to fix faulty equipment and stop careless habits?

Other Neptune meters also available for handling more than 150 industrial liquids. Ask today for full details . . . or a complete plant survey at no obligation.



Branches in:
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PORTLAND, ORE. • SAN FRANCISCO

When inquiring check CP 1631 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Scale-changing device prevents misreading of tachometers . . .

three models will measure to 100,000 rpm and to 10,000 fpm

Uses: For measuring rotational and linear speeds to an accuracy of plus or minus one percent.

Features: Scale-changing arrangement prevents misreading of ranges on instrument.



Tachometer, featuring scale-changing device, comes complete with carrying case

Description: Three different models, each having three ranges, measure rotational speeds from 2 to 100,000 rpm and linear speeds from 2 to 10,000 fpm. Equipment consists of two basic units — head which is placed on shaft of moving object, and indicator. Head unit includes a rotational shaft which operates set of contacts through positive cam mechanism. Indicator uses reactance circuit, multi-scaled milliammeter, and flash-light cell power

supply. Changes in voltage due to battery life may be compensated by self-contained calibration circuit.

Accessories include two external cone tips, internal cone tip, 0.1-foot disc, 1-ft disc, low-speed adapter, high-speed adapter, and extension arm. All items are stored in carrying case with tachometer. Equipment has total weight of 3-3/4 lb including carrying case which measures 11-7/16 x 7-5/16 x 3-3/4".

(Tachometers are a product of Meter and Instrument Department, General Electric Co., Dept. CP, 1 River Rd., Schenectady 5, N.Y. . . or for more information check CP 1632 on handy form, pages 2 and 3.)

Bulletin gives specifications on 1.5m spectrometer

Illustrated four-page leaflet describes 1.5 meter spectrometer. Slits, camera, and accessories are also covered. Also shown (to scale) is suggested laboratory arrangement.

Bul on 1.5m Spectrograph is issued by Applied Research Laboratories, Dept. CP, 3717 Park Place, Glendale 8, Calif. When inquiring specify CP 1633 on handy form, pages 2 and 3.

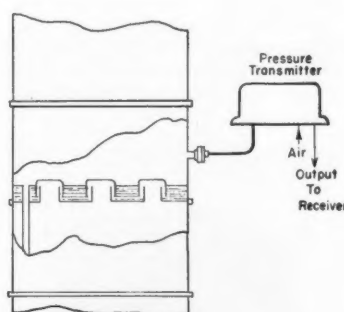
TRANSAIRE® Pressure Transmitter solves these tough problems!

Measuring within 1/2% of 20-40 psi shiftable range spans

THE Taylor TRANSAIRE Pressure Transmitter with short, shiftable spans gives unprecedented accuracy and sensitivity—plus the convenience of suppressed ranges at high pressure levels. Operating on the simple force-balance principle, it will measure and transmit minute pressure changes up to 1,000 ft. It's accurate to 1/2% of the selected short range span and sensitive to pressure changes of 1/2" water.

THREE IMPORTANT ADVANTAGES

1. Range spans of 20 and 40 psi are available throughout the range limits of 35 to 415 psia; 50 to 100 psi throughout 100 to 1,000 psia.
2. The volumetric type pressure system is extremely accurate, practically clog-proof, has a corrosion-resistant 316 stainless steel diaphragm.
3. Temperature and barometric compensation make for higher accuracy of measurement, and consequently closer control.



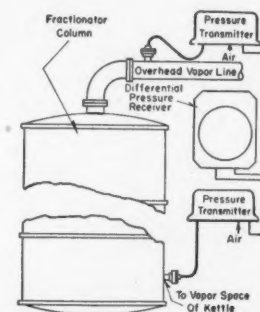
COLUMN PRESSURE

NARROW RANGE SPAN DETECTS PRESSURE TRENDS

Problem: To get highest possible purity of product consistent with good production economy. This requires the quick detection of pressure trends over a very narrow range.

Solution: The short, shiftable range spans (as short as 20 psi) of the TRANSAIRE Pressure Transmitter permit selection of operating range by a simple screw-driver adjustment. Its high order of sensitivity enables the operator to detect minute changes of pressure.

Result: Close control, because the minute pressure trends are practically instantaneously detected and transmitted to the controller and receiver. This means higher yield of a purer product, also great flexibility in changing to different product requirements.



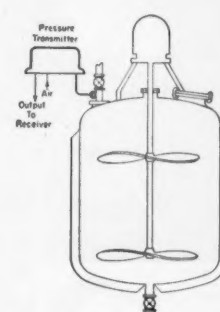
COLUMN PRESSURE DROP

PERMITS MAXIMUM CAPACITY OPERATION

Problem: To operate a column at maximum capacity, consistent with the preventing of flooding.

Solution: As the pressure drop across the column is a measure of the vapor velocity, the measurement of this drop with a short-range, highly sensitive, easily adjustable instrument enables the operator to keep the column safely close to the flooding point.

Result: Maximum production and uniform operation.



REACTOR PRESSURE

FLUSH SURFACE IS CLOG-PROOF

Problem: To measure pressure in reactor kettles containing viscous or corrosive liquids which tend to clog conventional measuring systems.

Solution: The closed volumetric measuring system of the TRANSAIRE Pressure Transmitter presents a flush surface on the inside of the vessel. It is clog-proof, highly sensitive and provides an accurate reading.

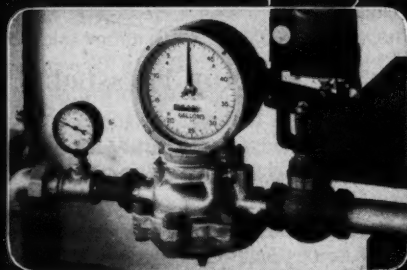
Result: Maximum yield of high purity product and a precise knowledge of the pressures maintained.

Ask your Taylor Field Engineer, or write for **Bulletin 98097**.
Taylor Instrument companies, Rochester, N. Y., and Toronto, Canada.

Taylor Instruments **MEAN ACCURACY FIRST**

When inquiring specify CP 1634 on handy form, pgs. 2-3

"I save time and get better accuracy in our liquid measurements with NIAGARA Electriccontact METERS"



Commercial liquids CAN be measured quickly, simply and positively. NIAGARA Electriccontact METERS assure accurate measurements through automatic control. The meter actuates a solenoid valve to stop the flow of liquid after delivery of the preset quantity. There's no friction load on the meter. NIAGARA METERS replace obsolete tanks and gauge sticks with a sure method of precise measurement.

Find out just how NIAGARA Electriccontact METERS can give you the most accurate batch measurements—automatically.

Send in the Data Request blank below today.

BUFFALO METER CO.

2892 MAIN STREET
BUFFALO, N.Y.

Gentlemen:

Please send me complete information on the use of economical NIAGARA METERS, based on the data below:

Liquid..... Pressure..... p.s.i.
Temp..... ° F.
Flow rate..... g.p.m.
Maximum batch..... gals.
Name.....
Company.....
Address.....

When inquiring check CP 1635 on handy form, pgs. 2-3

INSTRUMENTATION

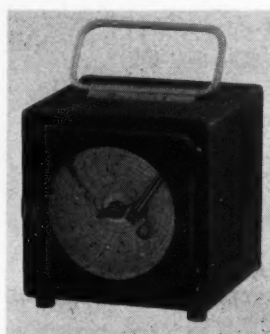
Portable unit records AC and DC currents and voltage...

meter circuit protected from external magnetic fields

Uses: Recording ampere-hour demand; checking low voltage, overloads, or current unbalance; recording current and duration in electroplating and metal refining; and other applications where accurate checks of voltage and current are necessary.

Features: Metering circuit is shielded from stray magnetic fields. Magnetic field created by conductor carrying 15,000 amp at distance of 3 ft from instrument causes temporary error of less than 1 per cent.

Description: Instruments are available for either AC or DC measurements. For DC measurements, unit provides ranges from 1 ma to 5 amp (self-contained)



Recorder may be carried or mounted on wall or panel

and voltages from 100 mv to 300 v (self-contained.) Higher ranges can be obtained with shunts or multipliers.

Rectifier model for AC is available in current ranges to 5 amp (self-contained) and voltages to 300v (self-contained).

Both models measure 6 3/4" high x 6 1/4" wide x 7" deep and use 4" diameter charts. Although designed as portable instruments, brackets and flange cases are available for wall or panel mounting.

(Models 6401 (DC) and 6402 (AC) are products of Weston Electrical Instrument Corp., Dept. CP, 614 Frelinghuysen Ave., Newark 5, N.J. . . . or for more information check CP 1636 on handy form, pages 2 and 3.)

Selenium Rectifiers

Phenolic Cartridge Type

Type P Type F

CASE DIAMETER:
From 1/4" to 1 1/4"
LENGTH: From 1/2" to 12"
CURRENT, half-wave: 1.5 ma to 60 ma
VOLTAGE, DC output: 20 volts to 200,000 volts
SEND FOR BULLETIN H-1

INTERNATIONAL RECTIFIER CORPORATION

1521 E. Grand Ave., El Segundo, Calif. • Phone: DRegon 8-6281
CHICAGO, 205 W. Wacker Drive • Phone: Franklin 2-3889
NEW YORK, 501 Madison Avenue • Phone: Plaza 5-8665

When inquiring check CP 1637 on handy form, pgs. 2-3

Depend on

AUTO-LITE

for
Temperature Indication

You Benefit from Eye-Level Readings

Model F-1 temperature indicator

3-way adjustable mounting

Auto-Lite offers many thermometer styles, permitting plant-wide temperature observation at low cost. Standard temperature ranges from minus 60°F to plus 750°F. Send for latest catalog showing various types.

THE ELECTRIC AUTO-LITE COMPANY
INSTRUMENT AND GAUGE DIVISION
TOLEDO 1, OHIO
NEW YORK • CHICAGO • SARNIA, ONTARIO

Rigid stem or capillary tubing for EYE-LEVEL remote reading. Priced from \$22.

TEMPERATURE INDICATORS & RECORDERS

When inquiring check CP 1638 on handy form, pgs. 2-3

CHEMICAL PROCESSING

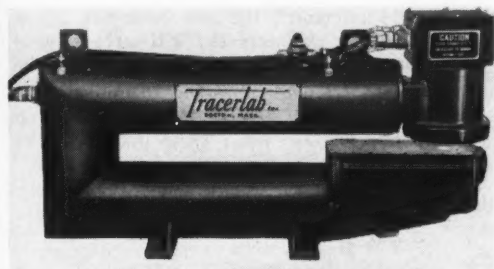
**Beta gage for light materials
uses radioactive cesium
as source . . .**

gages thickness of coatings on paper, plastics

Uses: For measuring thickness of films, foils, coatings on paper, or plastics or other light materials.

Features: Low-energy beta ray source is Cesium-137, an isotope with half life of 33 years. Long half life of source eliminates source decay variables and frequent replacement.

Description: Unit offers extreme sensitivity; its 3 mg/cm² full scale sensitivity is equivalent to basis weight change of only 20 lb per 3000 sq ft



Cesium-137 source has half life of 33 years

of paper or thickness change of only 1.2 mils of plastic film. Gage may be obtained with "C" frames of varying throat depths and "all-angle" scanning mounts to provide across-the-sheet weight profiles.

(Beta gage is a product of Tracerlab, Inc., Dept. CP, 130 High St., Boston 10, Mass. . . . or for more information check CP 1639 on handy form, pages 2 and 3.)

**You decide what articles
appear in CP . . .**

Yes, you're the judge in determining just what our editorial pages will contain from month to month. Every article appearing in CHEMICAL PROCESSING must first be "qualified" — that is, judged for its importance and idea value to our readers. In qualifying material, we rely heavily on reader response to related developments published in the past.

And that's where you come in. Your inquiries tell us what materials, processes, ideas, equipment you want most . . . and we follow through with articles most suitable to your needs . . . So when you inquire, you "vote" for "more articles like this".

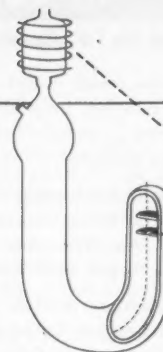
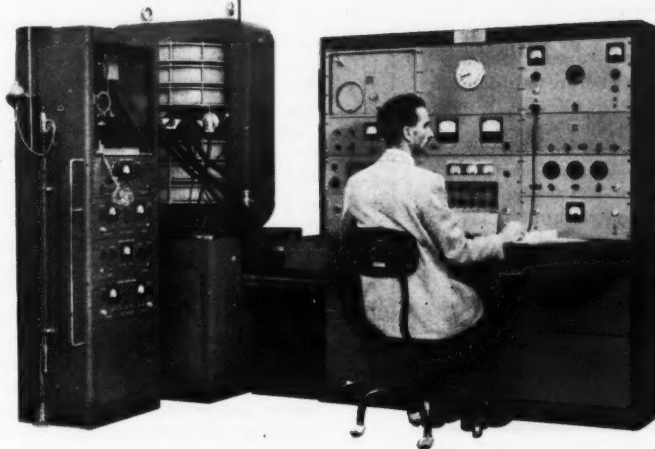
THE EDITORS

Now Consolidated offers

greater speed, accuracy, versatility

in the new improved Model 21-103C

Analytical Mass Spectrometer



A new feature—samples are electrically heated to 200°C. for high boiling point liquids.

Flip a switch to change the resolving power and get the mass-range you desire—another new feature.

103C features an accessory oven for electrically controlled sample heating, and instantaneous change in resolving power from the low mass-range of 150 to a high mass-range of 700 at the flick of a control panel switch. These two refinements greatly increase the flexibility of the instrument and adapt it to gas and light liquids or high molecular weight liquids or solids.

The new improved Model 21-103C Analytical Mass Spectrometer is now ready to maintain Consolidated's tradition of bringing the highest standards of speed, accuracy and versatility to analytical measurement and research applications throughout industry and the sciences.



For complete details send for Bulletin CEC 1800C X4.

Year after year CEC's line of Mass Spectrometers maintain their position of world leadership through a program of continuous improvement and refinement. CEC's Analytical Mass Spectrometer, for 12 years the accepted standard instrument for fundamental research in petroleum processing, refinery control laboratories, chemical manufacturing, molecular-structure studies, biochemical and related applications, now incorporates two major improvements.

Retaining all its proven features such as precisely regulated electronic circuitry, high speed recording, automatic scanning, and indexing of mass-scale on the spectra, the new Model 21-

Consolidated Engineering

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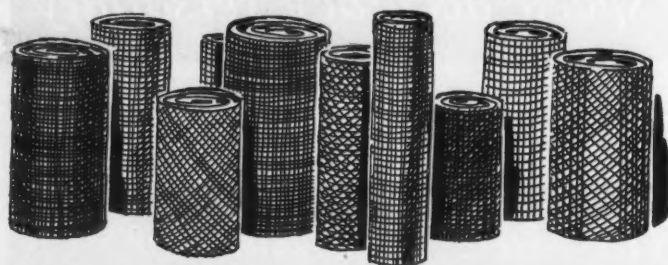
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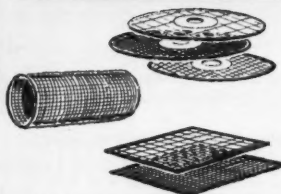
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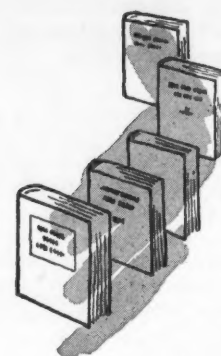
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Recent Books



Tower Packing and Packed Tower Design

Reviewed by D. S. DAVIS

Department of Chemical Engineering
Virginia Polytechnic Institute

A detailed, page-by-page comparison of the first and second editions of Max Leva's "Tower Packing and Packed Tower Design" reveals that (1) the main topics of the first edition — general considerations, mechanics of packed tower operation, fundamentals of mass transfer, generalization of data, absorption, and distillation — have rightfully gained the status of chapter headings through extensive expansion and thoughtful rewriting; (2) forty-one figures have grown to one-hundred and fifteen; (3) seven illustrative examples have been replaced by twenty; and (4) recent developments in theory and practice here and in Europe have required two hundred and seven citations to the literature where ninety-one sufficed previously.

New features include three tables of nomenclature placed in strategic positions, an exceptionally informative glossary, greatly improved problems, and sections that deal competently with nonisothermal absorption, effects of chemical reactions and surface tension, liquid-liquid systems, the systems: chlorine — water and acetone — water, and eight new topics that are pertinent to distillation. The bulky, folded nomographs and other important charts of the first edition, which are now slightly smaller, more convenient, and equally effective, are adequately supplemented with numerous small, useful, but easily read plots of less general application. Spot checking of the sample calculations, presented with unusual clarity and in gratifying detail, reveals no errors.

Although revision of the book has necessarily increased the number of pages from 119 to 214, physical redesign has kept the increase in weight within one ounce. Thoroughly brought up to date, and with many

1953 references, the new book will guide practicing engineers and will serve as welcome and reliable supporting material in college courses in absorption and distillation.

To obtain "Tower Packing and Packed Tower Design" remit \$8.50 direct to U.S. Stoneware Co., Dept. CP, 60 East 42nd St., New York 17, N. Y. When inquiring specify CP 1642 on handy form, pages 2 and 3.

Sanitary Chemicals

Reviewed by HENRY R. THACKER
Petersburg, Virginia

"Sanitary Chemicals" by Leonard Schwarzc et al has been written with the desire "to create a better understanding of the importance of sanitary products and their relationship to national health". The book is intended primarily for use by those people in the sanitary products field who have mastered the fundamentals of the science. In 576 pages it presents a concise, clear, and orderly development of specific chemicals and their uses in improving environmental conditions. It is most complete in its scope, containing a wealth of accessible information on disinfectants, deodorants, insecticides, rodenticides, floor waxes, soaps, detergents, specific testing procedures, and a section on labeling and packaging. The ultimate value of any such handbook lies in the fact that it offers current information in a readily available form that can be used easily in a practical manner. "Sanitary Chemicals" fulfills this criterion and should be of particular interest to sanitarians, public health engineers, and those people who are responsible for maintaining and improving public health.

To obtain "Sanitary Chemicals" remit \$8 direct to MacNair-Dorland Co., Dept. CP, 254 W. 31st St., New York 1, N. Y. When inquiring specify CP 1643 on handy form, pages 2 and 3.

Matthews' Textile Fibers

Reviewed by DR. LANDON A. SARVER
American Viscose Corporation

The appearance of each new edition of this old textile classic, which was first published exactly fifty years ago, has always been something of an event. This one, edited by Herbert R. Mauersberger, is no exception. The present volume is only slightly larger than its predecessor, and it is composed of 1251 pages, including illustrations. This sixth edition differs from the fifth principally in its greater attention to the new all-synthetic fibers, and in its inclusion of a new section on X-ray diagrams.

Majority of the twenty-two chapters, even in the case of a few by new authors, covers substantially the same material as before, but they have been brought up to date by the addition of new data or new illustrations. Exceptions to this are: Chapter VII on bast fibers and Chapter VIII on leaf fibers, which are about twice as long as before; the addition of a section on fortisan to Chapter XVI, which discusses regenerated cellulose fibers; a considerable amplification of Chapter XX, which deals with the all-synthetic fibers; and the addition of an entire new Chapter XXI on X-ray diagrams.

With respect to the all-synthetic fibers, even though much more information has been given than in the last edition, a still fuller treatment would have been desirable. This is especially true for acrilan, dynel and X-51; but even in the cases of nylon, Orlon and Dacron, which had the best coverage, the details of their basic chemistry and methods of manufacture are so fascinating that more could well have been given. This seems to be the principal defect of the book, though not a serious one; no one is more aware than the reviewer of the extreme difficulty of obtaining reliable and up-to-date information on the new synthetics. A few of the synthetic fibers mentioned in the last edition have been quite properly omitted this time, for the reason that they are not currently being produced.

The Table of Contents is somewhat less satisfactory than the one in the fifth edition, in that it gives only the main chapter headings and omits the sub-headings; it is thus more difficult to obtain a quick grasp of the subjects included in the book. The indexes and lists of references, on the other hand, are entirely adequate.

To obtain "Matthews' Textile Fibers" remit \$16.50 direct to John Wiley & Sons, Inc., Dept. CP, 440 Fourth Avenue, New York 16, N. Y. When inquiring specify CP 1644 on handy form, pages 2 and 3.

Induction and Dielectric Heating

Reviewed by MELVIN NORD
Consulting Engineer

This book by J. Wesley Cable should prove to be much more valuable than its title suggests, for it is not a theoretical book in electrical engineering, as one might have suspected, but a practical, down-to-earth book of considerable interest to all engineers. Theory is provided only in sufficient amount to prove interesting and useful, and by far the greatest portion of the book is devoted to practical applications of high frequency heating.

After a brief treatment of the theory of induction heating, electrical sources, and coil design, the author spends two hundred meaty pages describing such applications of induction heating as surface-hardening, annealing and other heat-treatment of metals, brazing, soldering, and welding of metals, induction heating for forging and for melting, and specialized applications of induction heating.

Second part of the book begins with a brief treatment of the theory of dielectric heating and concludes with about two hundred pages of applications in the plastics industry, in woodworking, in baking foundry cores, in food processing, in sterilization, and in moisture removal in many fields.

Because of wide applicability of these techniques in all branches of engineering, because little is known about them by most engineers, and because the book is practical, it is safe to predict that Cable's book will find a useful place in the hands of a large number of engineers.

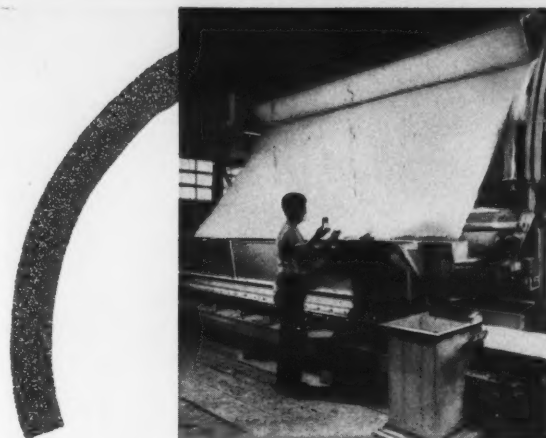
To obtain "Induction and Dielectric Heating" remit \$12.50 direct to Reinhold Publishing Corp., Dept. CP, 330 West 42nd St., New York 36, N. Y. When inquiring reader may simply specify CP 1645 on handy form, pages 2 and 3.

The Chemistry of Isobutyraldehyde

(Staff Review)

Tennessee Eastman Company has made available, in less than 100 pages, a summary of reactions and properties of isobutyraldehyde and its derivatives. This material is supplemented with sections devoted to synthesis, applications and precautions in handling, and is documented with 245 references.

"The Chemistry of Isobutyraldehyde" will be sent without charge by the Tennessee Eastman Company, Kingsport, Tenn., to those who request copies on company letterhead.



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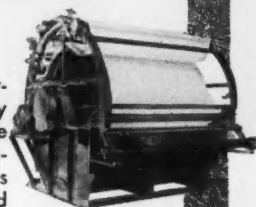
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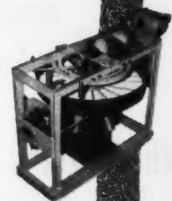
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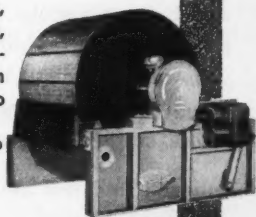
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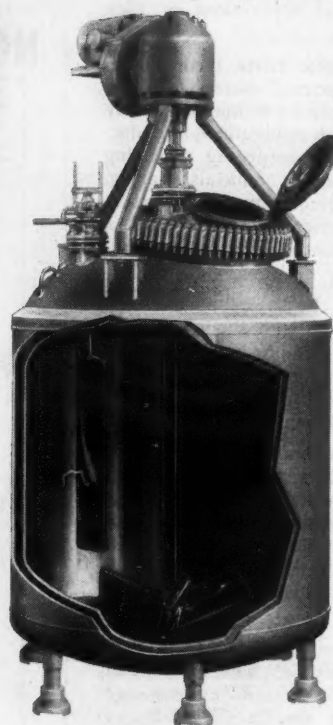
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RECENT BOOKS

Protective Atmospheres

Reviewed by M. V. NEVITT
Head, Department of
Metallurgical Engineering
Virginia Polytechnic Institute

Controlled atmospheres for industrial operations are given broader coverage than the title, "Protective Atmospheres", implies, in that atmospheres for carburizing and nitriding are dealt with, as well as means of protection against scaling discoloration, decarburizing and other forms of oxidizing attack.

Prime emphasis in this book by A. G. Hotchkiss and H. M. Webber is given to the practical side of the subject, in keeping with the authors' purpose of providing a reference book for production personnel. Chemistry of the pertinent gaseous reactions and gas-solid reactions are developed only to the extent necessary for understanding of the principles that underly selection of the proper atmosphere and means for producing it.

Although references are made to applications of atmosphere control in the chemical industries, the metallurgical applications are assigned the major share of the discussion. Types of atmospheres are discussed and compared from the standpoints of applicability to various operations, degree of protection, useful temperature ranges, relative initial and continuing costs, methods of purification and analysis, and storage and handling. A chapter devoted to corrective measures is particularly valuable for the production engineer. Good use is made of tables and many excellent line drawings and graphs. However, a large number of the photographs, although of high quality, make only a limited contribution to the presentation and might have been omitted.

To obtain "Protective Atmospheres" remit \$7 direct to John Wiley & Sons, Inc., Dept. CP, 440 Fourth Ave., New York 16, N. Y. When inquiring reader may simply specify CP 1648 on the convenient Reader Service slip which is located between pages 2 and 3.)

Catalysis

(Staff Review)

Purpose of the series is to record in orderly fashion all that is known about the theory and practice of catalysis. The work is a collection of monographs organized and edited by Paul H. Emmett of the Mellon Institute. Recognized authorities on each topic have contributed.

Volume I, Part 1, first book of the series to be released, covers principles and theories of both homogeneous and heterogeneous catalysis. New material has been included on catalyst supports, carriers, and methods of preparation. Subsequent volumes will discuss current ideas of solid state physics, and the catalytic processes such as synthesis, polymerization, hydrogenation, and halogenation.

The treatment is concentrated on catalysts and

RECENT BOOKS

their reactions, rather than the engineering or economic characteristics of the processes. (The biochemical catalysts, enzymes, are not included.) Numerous tables and graphs and extensive bibliography are in each section.

When the series is completed in about a year and a half, a total of five books will have been published. If they all continue on the same level as Volume I, Part 1, research chemists working with catalytic reactions will have in them an invaluable aid to their work.

To obtain "Catalysis, Vol. I, Part 1" remit \$10 direct to Book Division, Reinhold Publishing Corp., Dept. CP, 330 W. 42nd St., New York 36, N. Y. When inquiring check CP 1649, pgs. 2 and 3.

Nuclear Moments

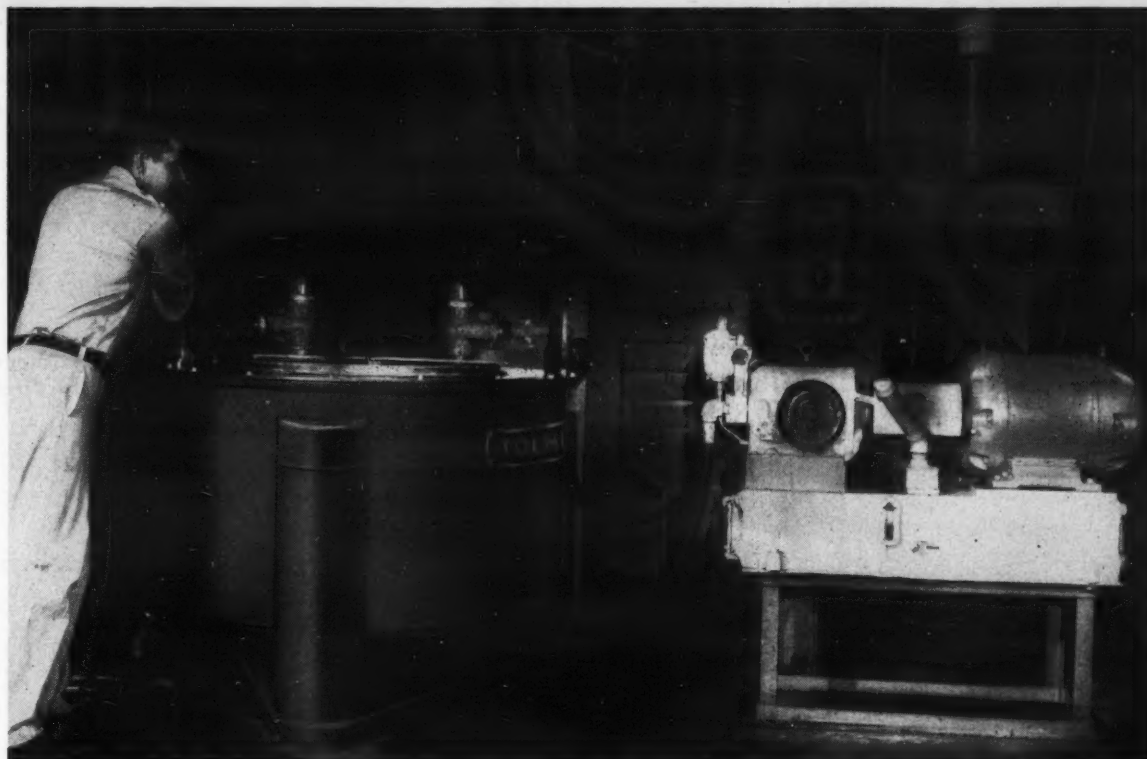
Reviewed by DR. FRANCIS BITTER
Massachusetts Institute of Technology

Norman F. Ramsey's "Nuclear Moments" summarizes in 140 pages results published in some 1000 articles, which he lists in a separate section. We have here something in the nature of a guide book briefly describing all the most important aspects of the subject with indications to the reader where more detailed discussion may be found.

The first chapter describes six characteristics to be used in describing nuclei, namely statistics, angular momentum, magnetic dipole moment, electric quadrupole moment, size and polarizability. Second chapter takes up the mathematical description of interaction of nuclei with atomic and molecular fields. The third describes experimental methods used in measuring nuclear moments and includes optical methods, molecular beam methods, and radio-frequency and microwave resonance methods. Fourth chapter lists experimental results and gives an excellent brief summary of the significance of these results for nuclear physics. The final chapter discusses application of nuclear moment investigations to development of our understanding of the structure of molecules, liquids, and solids. A brief appendix discusses nuclear shell structure.

Without intending to detract from the great value of this book, one must point out that it is rather spotty. Those items concerning which Professor Ramsey has made extensive contributions, such as the internal fields of molecules, or molecular beam experiments, are given much more extensive treatment than other important subjects. The description of optical techniques seems too sketchy as to be hardly worth including. The choice of the rather complicated block diagram used to illustrate nuclear resonance bridge circuits may give the impression that such measurements are more difficult than they really are. Such criticism, however, should be considered in proper perspective as minor since "Nuclear Moments" is a most useful book.

To obtain "Nuclear Moments" remit \$5 direct to John Wiley & Sons, Inc., Dept. CP, 440 Fourth Ave., New York 16, N. Y. When inquiring specify CP 1649A on handy form, pages 2 and 3.



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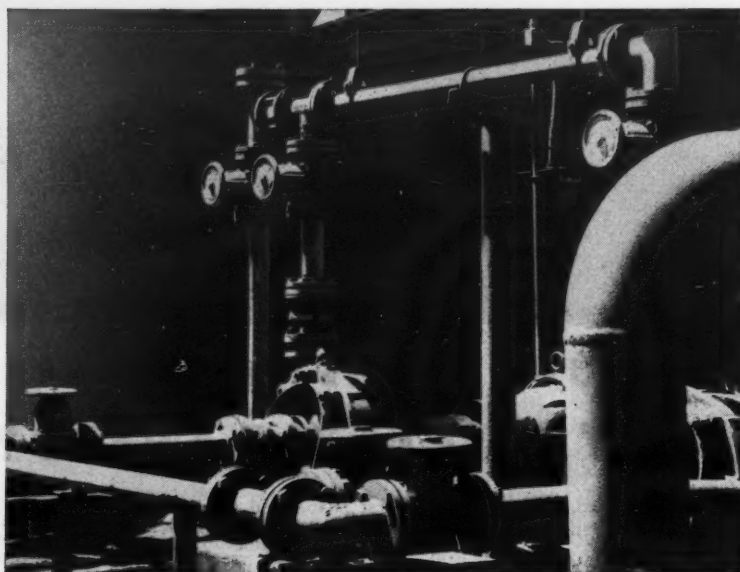
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These corrosion-resistant Saran Lined Pipes, Fittings and Valves have conveyed hydrochloric acid for seven years . . . with trouble-free service!



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corrosion control

With stainless steel finishing pan,
Hiram Walker & Sons has —

less downtime, higher heat transfer

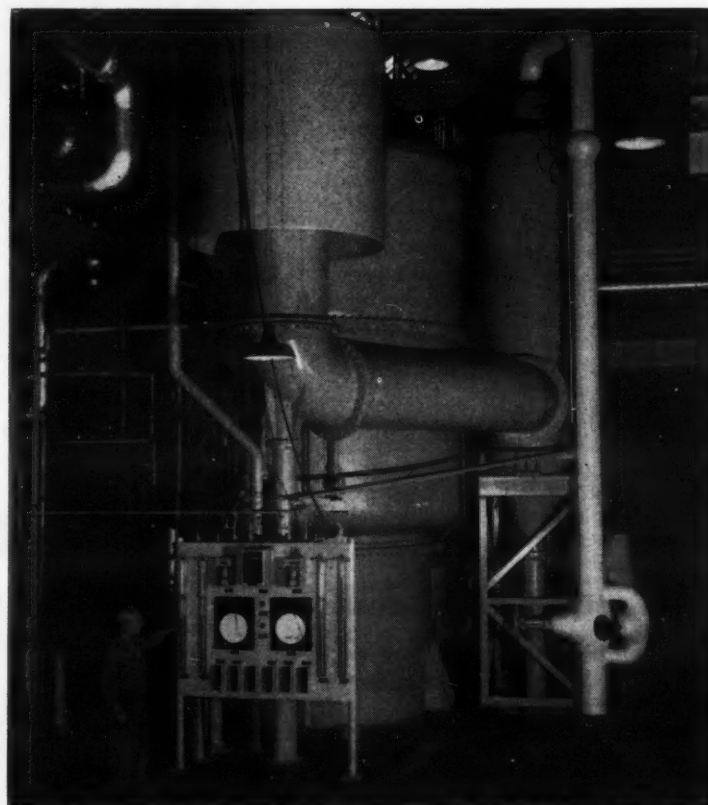
Overcomes mechanical troubles and corrosion experienced
with former cast iron evaporator

GEORGE C. NEUREUTHER, Manager
Distillery and By-products Divisions
Hiram Walker & Sons, Inc., Peoria, Ill.
With Associate Editor **GORDON WEYERMULLER**

Problem: Cast iron finishing pan in use at the world's largest beverage distillery, Hiram Walker & Sons, Inc., Peoria, Ill., was subject to corrosion. Mechanical troubles, such as an occasional crack in the cast iron, also occurred. Evaporator

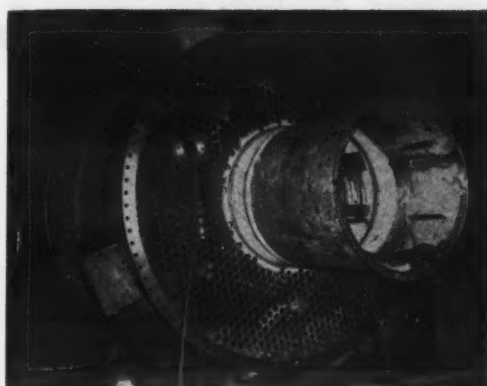
tubes had a tendency to clog up, making frequent cleaning necessary.

Finishing pan is used to process soluble, syrupy liquids, known as stillage, from spent grains. These liquids are corrosive, ranging from 3.7 to 5.5 pH. Temperature of processing solutions averages 135°F. Stillage is concentrated from 20 to 25% solids up to 35 to 40%. It is then used in the manufacture of three supplements: distiller's dark grains, Stimuflav, and riboflavin concentrate. These are mixed with



Stainless steel finishing pan at Hiram Walker & Sons not only eliminates corrosion problems but also makes it easier to maintain product purity

How To Solve Corrosion Problems



Stainless steel tubes in calandria section do not clog

cereal grains and other supplements to produce balanced ration feeds for livestock and poultry.

Solution: On Feb. 24, 1954, the stainless steel finishing pan shown in Fig 1 was placed in operation. Except for its external supporting members, entire unit is constructed of 304 solid stainless steel or 304 stainless clad steel. Spot radiography was used to check quality of welding. Following fabrication, all internal stainless surfaces were hand pickled and passivated.

Calandria section, shown in Fig 2, is solid stainless steel, including the No. 16 gage tubes. Main evaporator body is equipped with conventional inlet and large vapor outlet connections, as well as 20" quick opening manholes, sight and light glasses with wash pipes, and special liquid level gage.

Barometric condenser is a Webre, multi-curtain, counter current unit, constructed of 20% stainless clad steel. It is provided with a two-stage Schutte and Koerting steam jet exhauster.

Condenser will handle 20,000 lb of evaporation per hour and will maintain 26" of vacuum.

Webre mechanical circulator has dual cast stainless 40" diameter rotating elements supported on a 5" diameter shaft and operating between three rectifying vanes. Circulator is driven by means of a 75-hp motor, through a Philadelphia Gear Works reduction unit.

Other statistics on the pan are as follows:

Weight (lb)	47,725
Overall height	30'
Heating surface (sq ft)	3370
Heat transfer coefficient, Btu/hr./D'°F	60-100*
Calandria diameter	8'6"
Vapor space diameter	11'
Catchall diameter	6'
Condenser diameter	4'
*Varies with viscosity and composition of syrup.	

Results: Stainless steel finishing pan has minimized downtime by elimination of corrosion problems and mechanical difficulties. Heat transfer has also been improved because the tubes

(Continued on next page)



PROBLEM: Valving sulphur-laden flue gas at 800 deg. F. and 300 psi.

REMEDY: A 1/8-in. layer of HASTELLOY alloy B was applied to seats and seating surfaces.

RESULT: The valves gave over four years' service despite the corrosive conditions.



PROBLEM: Protecting a preheater from corrosive attack during periodic contact with hydrochloric acid, trichlor benzene, and other chlorine compounds at 300 deg. F.

REMEDY: Complete lining with HASTELLOY alloy C 11-gage sheet.

RESULT: The vessel has given four years' service and is still going strong.



Free: Money-saving jobs like these are described in detail in the monthly magazine HAYNES ALLOYS DIGEST. To receive a copy regularly, write Editor, HAYNES ALLOYS DIGEST, Room 308, 30 East 42nd Street, New York 17, New York.

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When inquiring check CP 1652 on handy form, pgs. 2-3

(Continued from preceding page)

do not clog up. Stainless steel pan is easier to clean and does not require as frequent cleaning. Only a minimum of maintenance has been necessary on unit. Use of stainless steel makes it easier to maintain the high standard of product purity.

(Basic design data was furnished by United States Pipe and Foundry Co., Dept. CP, E. Burlington, N. J.)

(Stainless steel pan was fabricated by Leader Iron Works Inc., Dept. CP, Decatur, Ill. . . . or for more information check CP 1653, pgs. 2 & 3.)

Sulfuric acid and other corrosives combated in drainage system by use of clay pipe . . .

installation at Cadillac Div., General Motors is made quickly and easily

Large amounts of corrosive fluids had to be withstood by drainage system constructed for the new plating plant of the Cadillac Div. of General Motors Corp. at Detroit, Mich. Problem was solved by the use of industrial clay pipe, the in-



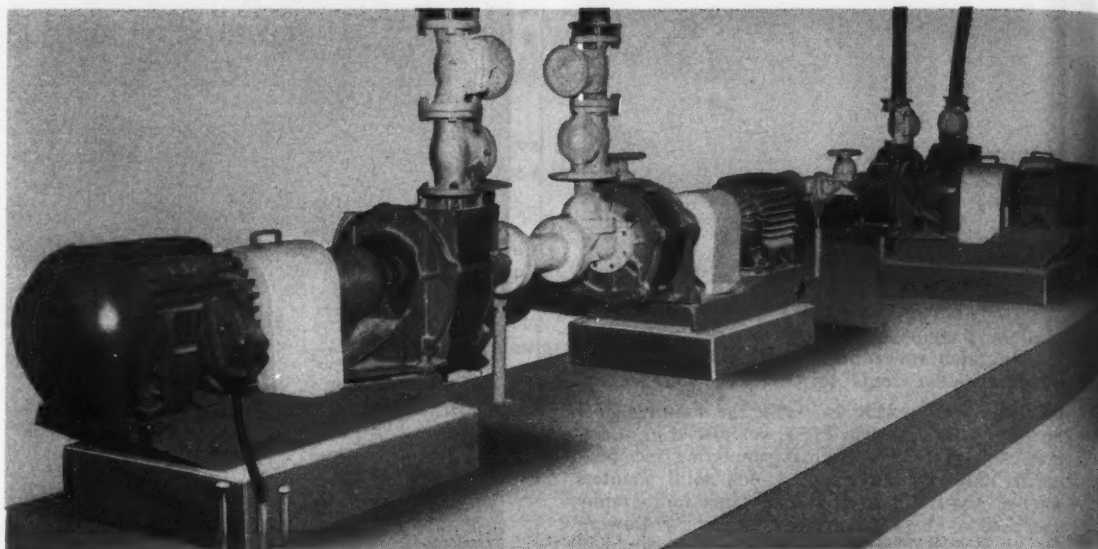
Union joint with split flange collar assures quick and easy installation of clay pipe at the new Cadillac plating plant

stallation of which was made quickly and easily. Pipe resists sulfuric acid in high concentrations, other corrosive solutions used in plating process, and chrome color dyes.

Installation was quickly made since sections were easily connected by turning on threads, with use of collars. Where T's and Y's are required in any situation where space limitations are encountered, union joint with split flange collar facilitates installation. Pipe can be buried in trenches, as shown in photograph, or strap-hung from ceilings. At the Cadillac plant, 4, 6, and 8" diameters of pipe were used.

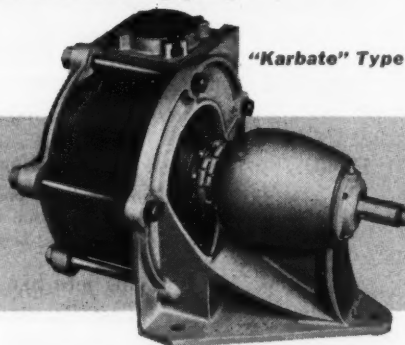
(Screw-Seal Clay Pipe is product of Vitrefied Products Division, The Robinson Clay Product Co., Dept. CP, 65 W. State St., Akron 9, Ohio or for more information check CP 1654 on handy form, pages 2 and 3.)

STANDARDIZE...

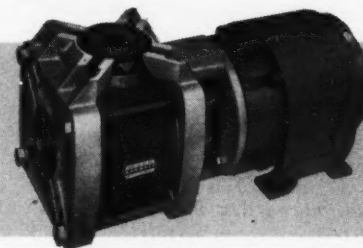


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- Strong, rugged, easily-maintained constructions



"Karbate" Type "C" Centrifugal Pump



"Karbate" Type "F" Centrifugal Pump

A heavy duty model. Rugged, "Karbate" wet-end parts, including impeller and seal assembly, accessible without disturbing pump shaft, ball bearings or pump-to-driver alignment. Mechanical seal standard at no extra cost. Capacities to 1500 gpm, heads to 120 feet in three pump sizes - 2", 3" and 4" I.D. discharge openings.

Low cost, motor-mounted model with features of costly, frame-mounted pumps. Permanent pump and motor alignment. Internal-type, mechanical seal adjustable while pump is running, standard in all sizes at no extra cost. Capacities to 200 gpm, heads to 100 feet in two pump sizes - 1 1/4" and 2" I.D. discharge openings.



Write for Catalog Section S-7250 Today!



...WITH "KARBATE"

BRAND

IMPERVIOUS GRAPHITE PROCESS EQUIPMENT



"Karbate" Standard Heat Exchangers
Catalog Section S-6840

"Karbate" "Series 90A" and "Series 310A"
Heat Exchangers—Catalog Section S-6740

You can standardize with complete economy on National Carbon's extensive line of "Karbate" impervious graphite tube-and-shell-type heat exchangers. "Series 90A" and "Series 310A" "Karbate" exchangers are available from stock in single and multi-pass tube-side arrangements—tube lengths to 16 feet and surface

areas up to 162 square feet per unit. "Karbate" standard heat exchangers, based on stock "Karbate" tube-bundle and cover constructions, provide surface areas up to 2300 square feet per unit in 6, 9, 12, 14 and 16 feet tube lengths at unusually low first-costs. Choice of tube-pass and shell arrangements is virtually unlimited.

SEE FOR YOURSELF—properties, manufacture, applications! Learn how to do it!

... in these 16mm, full-color movies on "Karbate" impervious graphite equipment. Conveniently divided into "what is it" and "how to" sections—"MEETING THE CHALLENGE" and "BY WAY OF EXPERIENCE." History of the material, development, industrial applications... plus step-by-step installation and maintenance. WRITE—right now—for showing dates.

Descriptive Booklet Sent On Request

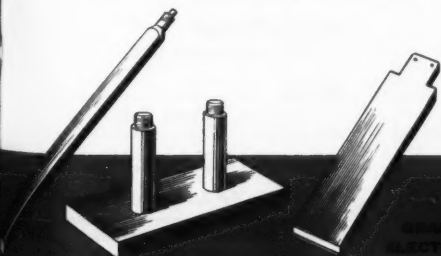
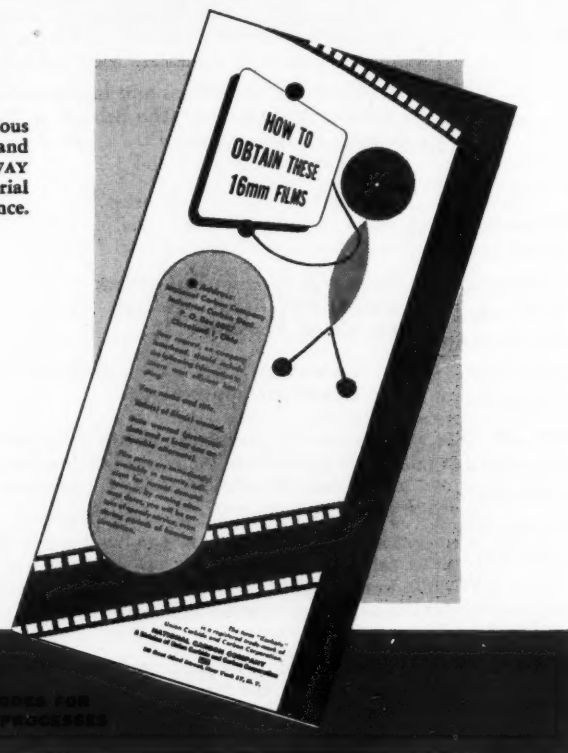
The term "Karbate" is a registered trade-mark of Union Carbide and Carbon Corporation

NATIONAL CARBON COMPANY

A Division of Union Carbide and Carbon Corporation
30 East 42nd Street, New York 17, N.Y.

District Sales Offices: Atlanta, Chicago, Dallas, Kansas City, New York, Pittsburgh, San Francisco

IN CANADA: Union Carbide Canada Limited, Toronto



When inquiring check CP 1655 on handy form, pgs. 2-3

CORROSION

Corrosion-resistant materials for backward-blade centrifugal fans...

NAFM-approved units can also be furnished for high static duty

Various types of stainless steel, Hastelloy, and other corrosion-resistant metals can be used for fabrication of backward-blade centrifugal fans. For other applications, fans can be coated with corrosion-resistant materials such as Lithcote, Amercoat, neoprene, rubber, and other products. Units are NAFM-approved. Heli-arc welding is used to avoid contamination by other metals, eliminating corrosion at the seams. Fans are also furnished for high static duty of 7" static pressure or higher.



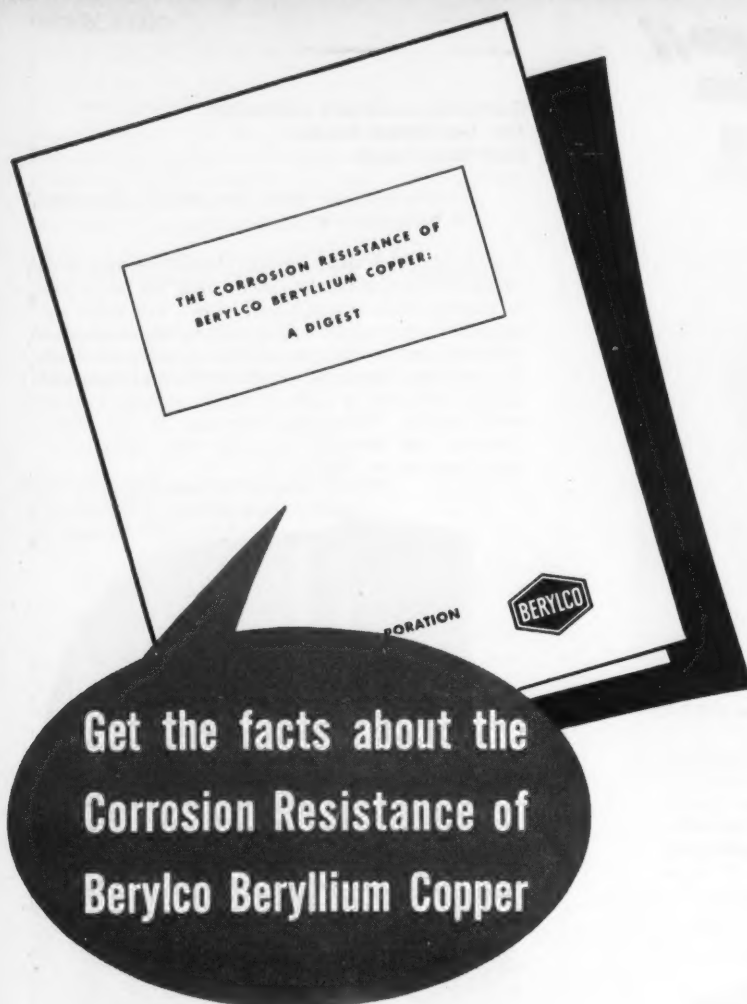
Centrifugal fans are being used to handle a variety of corrosives

These fans are being used in a variety of applications in which fumes of sulfuric, nitric, hydrochloric, and chromic acids, as well as other corrosives are being handled. Heat-resistant fans for temperatures up to 1600°F and spark-resistant units utilizing aluminum are also manufactured.

Individual units remain efficient over a broad range of volume. For one typical fan, 34% of the volume capacity is above 80% mechanical efficiency and 54% of volume above 70% efficiency. Design provides the characteristic of non-overloading. If a drop occurs in static pressure, required horsepower remains comparable with the properly selected motor.

Noise level readings are low. Spun inlet and wheel cones are used to permit quiet entry of air to fan wheel. A number of arrangements are available in capacities from 700 to over 100,000 cfm.

(Backward-blade centrifugal fans are manufactured by General Blower Co., Dept. CP, Morton Grove, Ill. ... or for more information reader may simply check CP 1656 on the convenient Reader Service slip which is located between pages two and three.)



This 4-page folder is a useful guide to the performance of beryllium copper alloys when exposed to a wide number of specific media. Send for your free copy today.

In general, Berylco resembles other high-copper alloys in resistance to corrosion. It has good resistance to marine and industrial atmospheres, fresh and salt water, most alkaline solutions, and some acids. It is not subject to season cracking or corrosion fatigue. It can be plated without danger of hydrogen embrittlement.

Why is Berylco selected over other materials of comparable corrosion resistance? Berylco beryllium copper parts are stronger, wear better, have greater resistance to moderately elevated temperatures than other copper-base alloys; also they gain in strength, ductility and impact resistance at subzero temperatures. Berylco is an age-hardening alloy, can be easily worked while soft, then hardened by a simple low-temperature heat treatment for maximum strength, wear resistance and conductivity.

Berylco beryllium copper alloys are available in a number of wrought forms or as casting ingots for immediate delivery



THE BERYLLIUM CORPORATION

Dept. 4H, READING 22, PA.

New York • Springfield, Mass. • Rochester, N.Y. • Philadelphia • Cleveland
Dayton • Detroit • Chicago • Minneapolis • San Francisco • Los Angeles

Representatives in principal world-trade centers

When inquiring check CP 1657 on handy form, pgs. 2-3

CORROSION

Teflon gaskets and accessories covered in catalog

Teflon gaskets and accessories described in bulletin are impervious to all chemicals except molten alkali metals, fluorine at elevated temperatures, and chlorine trifluoride.

Bul TG-953 is issued by U. S. Gasket Co., Dept. CP, 602 N. Tenth St., Camden 1, N. J. When inquiring specify CP 1658 on handy form, pages 2 and 3.

Hot extrusion production process provides seamless stainless alloy tubing . . .

austenitic steel is suitable for high stress and temperature applications

An alloy steel designed for use in equipment operating under high stress and temperature conditions is now available in seamless tubular form. Through the use of the hot extrusion production process, 19-9DL Alloy has been made available in a limited size range in the seamless tubing. It has good strength at temperatures up to 1200°F and has been successfully used at somewhat higher temperatures in some applications.

This austenitic stainless steel contains chromium, nickel, molybdenum, tungsten and small quantities of columbium, tantalum, and titanium. Corrosion resistance is similar to that of high-carbon, 18% chromium, 8% nickel stainless steel. Oxidation rate of 19-9DL is .0008 inches penetration per year. Stress rupture and creep values are comparatively high.

(Information on seamless tube may be obtained from Tubular Products Div., The Babcock & Wilcox Co., Dept. CP, Beaver Falls, Pa. . . or check CP 1659 on handy form, pages 2 and 3.)

Inertness to chemical attack makes PVC ideally suited for pump housing . . .

no stuffing boxes and no shaft seals are needed in self-priming units

Uses: For pumping a wide variety of corrosives. PVC's properties of being tasteless and odorless make unit of value in other applications.

Features: At ordinary temperatures, polyvinyl chloride is well suited for handling acids, alkalis, salts, oxidizing agents, oils, greases, and alcohols. Pumps fabricated from material are self-priming and do not contain stuffing boxes or shaft seals of any sort.

Description: Unplasticized rigid polyvinyl chloride is used for the body block of "V" Series of flex-i-liner pumps. Flex-i-liner is available in vinyl chloride, as well as rubber and other materials. Design of pump restricts liquid to contact with



PERMANITE

**Solvent Proof !
Alkali Proof
Acid Proof**

CEMENT

PERMANITE Resin Cement consists of a Furan Resin Solution and an inert carbon powder filler. When properly mixed it makes an excellent corrosion proof mortar that is resistant to acids, alkalis of all concentrations, solvents, oil, grease, water and steam at temperatures to 280°F.

PERMANITE Cement is ideally suited for use in acid proof brick floors, sumps, sewers, neutralization tanks and brick linings. It is safe to handle, safe to store and undergoes no physical change in storage.

Write for our bulletin No. 4-D PERMANITE Cement which gives complete and detailed information.

Knight has also developed a line of specialized cements to meet almost any combination of service conditions. These include:

KNIGHT No. 2
— Silicate base

KNIGHTBOND
— Sulphur-Resin base

KABO
— Phenolic Resin base

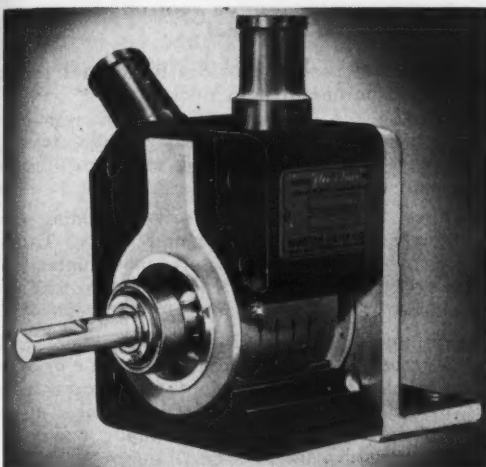
MAURICE A. KNIGHT
408 Kelly Ave., Akron 9, O.

Acid and Alkali-proof Chemical Equipment

When inquiring check CP 1660 on handy form, pgs. 2-3

CHEMICAL PROCESSING

CORROSION



Polyvinyl chloride pump is available in capacities from 1/3 to 20 gpm

body block and flex-i-liner. Activating element is an eccentric shaft and rotor assembly.

Capacities from 1/3 to 20 gpm are attained with pressures up to 60 psi and vacuum to 26" Hg.

(Series "V" pumps are manufactured by Vanton Pump & Equipment Corp., Dept. CP, Empire State Bldg., New York 1, N. Y. . . or for more information check CP 1661, pages 2 and 3.)

Non-corrodible parts featured on paint roller coater . . .

assembly utilizes plastic bearings and phenolic impregnated fiber core

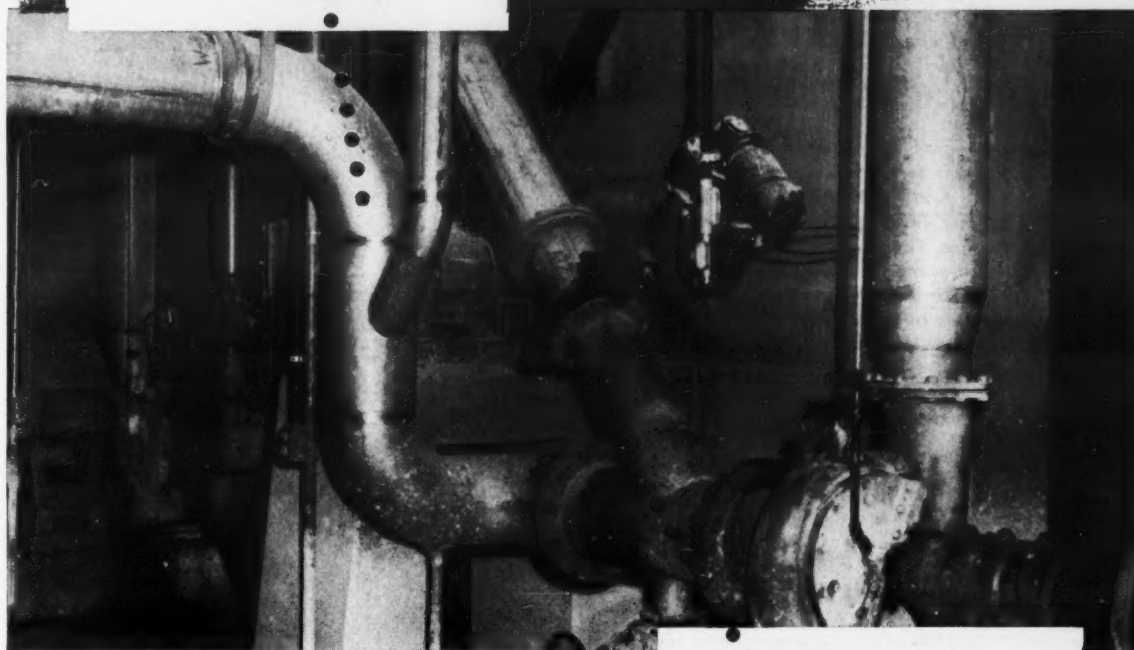
Recently announced paint roller coater has solid plastic bearings that will not mar surfaces or corrode. Unit has removable cover with phenolic impregnated fiber core bonded with Pliobond. Aluminum fin cylinder is self-adjusting.

Choice of wool, mohair, or Dynel is furnished in covers. They are easily cleaned and have a high paint carrying capacity. Deep-drawn metal tray has no seams or sharp corners.

(Roller coater is product of Pittsburgh Plate Glass Co., Dept. CP, 632 Fort Duquesne Blvd., Pittsburgh 22, Pa. . . or check CP 1662, pages 2 and 3.)

If you need a processing unit or material to combat corrosion . . .

try looking in the alphabetical Product Directory on pages 198 to 201. Your Editors started this service many years ago, to make it easy for you to locate your interests in each issue.



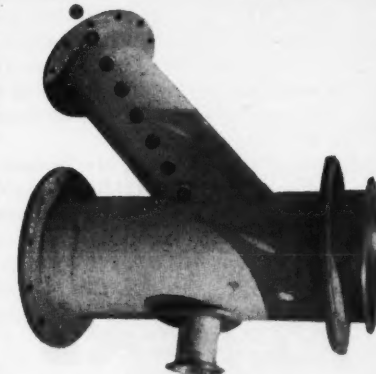
NEKOOSA-EDWARDS Multi-Million Dollar Expansion Program Includes TRI-CLOVER Fittings

The assemblies shown here are part of the stainless steel fittings and fitting assemblies manufactured by Tri-Clover to meet the requirements of Nekoosa-Edwards Paper Company. These particular units are part of the Vortrap assemblies, and are composed of standard Tri-Clover fittings factory-welded into assemblies and then fully annealed to provide maximum corrosion-resistance.

By utilizing "standard" fittings, together with Tri-Clover's specialized experience in the expert welding of stainless steel fittings, pipe and tubing, mills like Nekoosa-Edwards are assured of highest quality materials and workmanship, with full corrosion-resistance throughout.

Experience and craftsmanship make the big difference in the production of long-lasting, fully corrosion-resistant assemblies. That's why more and more mills and plants in the chemical-process industries are specifying TRI-CLOVER . . . for the highest quality stainless steel fittings, pipe, tubing and pumps.

Write for further details.



See your nearest TRI-CLOVER DISTRIBUTOR
EXPORT DEPARTMENT, 8 So. Michigan Ave.,
Chicago 3, U.S.A.

LADISH CO.
Tri-Clover Division
KENOSHA WISCONSIN

THE Complete LINE

1454

When inquiring check CP 1663 on handy form, pgs. 2-3

How this condenser shell of **HERCULOY** was welded

Here is one of two large vapor condensers made by Farrar & Trefits, Inc., Buffalo, N. Y., for National Aniline Div., Allied Chemical & Dye Corp. The shells are of Herculoy, Revere's silicon bronze. They were welded by a semi-automatic consumable-electrode gas-shielded method, which has decided advantages in speed and rate of deposition, plus minimum distortion. The latter was important in this case because of the limited clearance between shell and the bundle of 2150 copper tubes.

Welding was done at 300 amperes. Feed, 320 inches per minute, using 1/16" diameter Herculoy wire, AWS.E-CUSI. Welds which might cause troublesome distortion were peened. No preheating was required, and no clamping or jiggling. Plates were beveled with a 60° included angle, welded from outside, back-chipped and welded from inside. Frequent spot X-rays were taken, plus close inspection, to make sure operator was into sound metal. The condenser also has solid Herculoy flanges, 4" square. These were built up in three segments, welded flat, then cold rolled to 90" diameter, without cracking the welds. After machining there was no sign of porosity or cracking.

Copper and copper alloys can be quickly and perfectly welded. The Welding Section of the Revere Research & Development Department will be glad to collaborate with you on welding matters.

REVERE

COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801

230 Park Avenue, New York 17, N. Y.

Mills: Baltimore, Md.; Chicago and Clinton, Ill.; Detroit, Mich.; Los Angeles and Riverside, Calif.; New Bedford, Mass.; Rome, N. Y. Sales Offices in Principal Cities, Distributors Everywhere

SEE "MEET THE PRESS" ON NBC TELEVISION, SUNDAYS

LOWERING 25-ton bundle of copper tubes into welded Herculoy shell. A special steel cradle was devised to handle the bundle. Clearance between bundle and shell, 3/4". In all over 75,000 pounds of copper and copper alloys were used in each condenser.

CORROSION

Corrosion, contamination controlled by use of nickel clad steel . . .

electrical process provides thicknesses up to .020" on one or both sides

Uses: For fabrication into storage tanks, vessels, and other equipment requiring corrosion or contamination resistance.

Features: Thicknesses of nickel cladding can be closely controlled to meet requirements. Thicknesses of .006 to .010" will solve most contamination problems. Heavier deposits, up to .020" in thickness, are suited to control of corrosion.

Description: Nickel clad steel plate is prepared by electrodeposition of pure nickel on one or both sides of mild steel plates ranging in thickness from 1/8 to 3/4". Plated plates, available in sizes up to 8 x 20', will withstand heating, forming, and bending without damage.

(Lectro-Clad nickel plated steel is product of Bart Mfg. Co., Dept. CP, 229 Main St., Belleville, N. J. . . . or check CP 1665, pages 2 and 3.)

Fluorocarbon plastic diaphragms reduce maintenance of valves handling organics . . .

no sticking even after 90 days of service with aromatics and ketones at 230°F

Reduction in maintenance has resulted from equipping Saunders valves with fluorocarbon plastic diaphragms. Valves are being used to handle aromatics and ketones at 230°F. Even after 90 days of service, diaphragms made of the Kel-F plastic are still flexible. Sticking has been elimi-



Fluorocarbon diaphragm is utilized by Saunders valve designed for corrosive service

When inquiring specify CP 1664 on handy form, pgs. 2-3

CORROSION

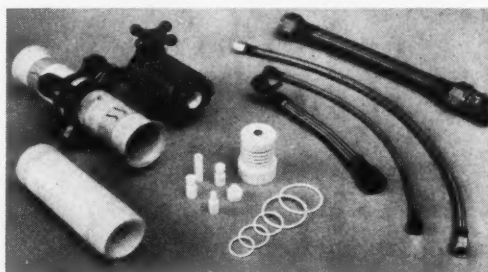
nated and positive fluid control maintained. Diaphragms are being fabricated of the plastic for Saunders valves of 1/2 to 8" size specifically for corrosive service.

(Information on valves may be obtained from The Grinnell Co., Inc., Dept. CP, 260 W. Exchange St., Providence, R. I. . . or for more information check CP 1666 on handy form, pages 2 and 3.)

Corrosives from -100 to 450°F handled by line of Teflon hose and pipe . . .

lightness and high tensile strength also advantages of products

Line of Teflon plastic hose and pipe will handle practically all corrosive liquids at temperatures from -100 to 450°F without being affected. Lightness in weight, high tensile strength, excellent dielectric properties, and low coefficient of friction are also advantages offered by the material.



Representative hose, pipe, and assembly parts fabricated from Teflon

Hose is presently available in a range of seven sizes from 1/4 through 1". Three additional sizes will soon be added to line. Laminated pipe can be furnished in 1, 1 1/2, 2, 3, and 4" diameters. Special sizes can be produced where warranted.

(Fluoroflex-T hose and pipe are products of Resistoflex Corp., Dept. CP, 37 Planson St., Belleville, N. J. . . or for more information check CP 1667 on handy form, pages 2 and 3.)

Ceramic-coated thermocouple tubes provide savings

Longer life obtained for thermocouples inserted in ceramic-coated protection tubes is explained in four-page bulletin. Reduced number of tubes used, lower maintenance, and decrease in downtime are also described.

Bul on ceramic coated thermocouple protection tubes is issued by Barrows Porcelain Enamel Co., Dept. CP, Langdon Rd. & Pennsylvania R. R., Cincinnati 13, Ohio. When inquiring specify CP 1668 on handy form, pages 2 and 3.

Chempump . . .

a centrifugal
that
can't
possibly
leak



ELIMINATE THESE PROBLEMS

There are no mechanical seals . . . no stuffing box . . . no lubrication! The pump is totally enclosed, motor and all!

There's no leakage or contamination of fluids . . . completely contains expensive, toxic, or corrosive fluids . . . protects plant and personnel.

The combined rotor and impeller assembly, actuated by a radial magnetic drive, is the *only* moving part! Fluids circulate through the rotor chamber of the motor. The stator is isolated from the fluid by a corrosion-resistant, non-magnetic alloy cylinder. And the rotor is hermetically sealed.

Thousands of installations over a 6-year period of field experience have resulted in the Chempump design. Users throughout industry are now enjoying the benefits of this design, in hundreds of successful installations.

Chempump is available in from 1/8 up to 3 horsepower. Capacity range is from 0 to 180 gallons per minute. Heads from 3 to 90 feet. Wide selection of alloys available. Prices start at approximately \$100.00.

LITERATURE REFERENCE: BULLETIN G-1000. Write for your free copy.

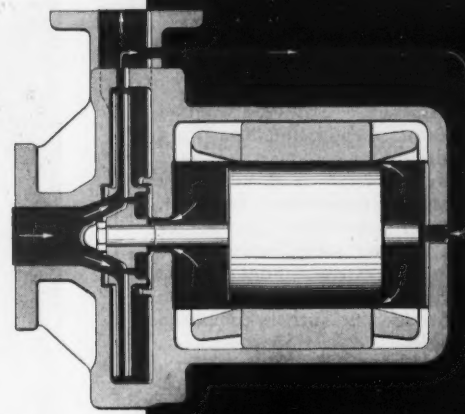
APPROVED BY
Underwriters Laboratories and
Canadian Standards Association for
Class 1, Group D
Hazardous Liquids and Hazardous Locations

CHEMPUMP CORPORATION

1354 EAST MERMAID LANE • PHILA. 18, PA.

ENGINEERING REPRESENTATIVES IN OVER 30 PRINCIPAL CITIES IN THE UNITED STATES AND CANADA

designed to eliminate
most of your
pumping problems
by eliminating
their source.



HANDLES THESE FLUIDS

... AND MORE

... IN CONTINUOUS,
TROUBLE-FREE OPERATION

Hydrofluoric Acid

Nitric Acid

Formaldehyde

Trichlorethylene

Titanium Tetrachloride

Organic Solvents

Carbon Disulfide

Freon

Dawtherm

When inquiring check CP 1669 on handy form, pgs. 2-3

**Inhibitor arrests rust
when used as primer
or for touching up**

Uses: Compound can be used as both primer and coating for new metals, or for touching up rusted surfaces.

Features: Nine-month outside exposure test and 300-hr weatherometer test show material to provide excellent protection from rust. Product furnishes good bonderizing for other films.

Description: Rustend is a rust inhibitor formulation consisting of drying and semi-drying oils, soluble minerals, a dryer, and a corrosion preventive synergist. Material essentially consists of film forming solids content in a petroleum carrier. Film formers polymerize upon drying with slight tack that anchors compound to surface.

(Rustend inhibitor is product of American Sand-Banum Co., Inc., Dept. CP, 9 Rockefeller Plaza, New York 20, N. Y. . . . or for more information check CP 1670 on handy form, pages 2 and 3.)

**Method for joining
ceramic lined pipe
facilitates use . . .**

opens up additional applications in chemical processing

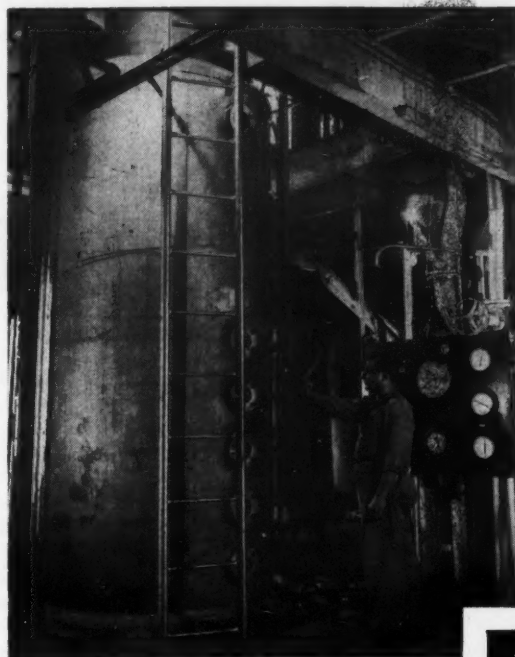
Uses: For chemical processing applications.

Features: Standard lengths of the porcelain enamel lined pipe have been successfully used to resist effects of chlorine at elevated temperatures in an aluminum fluxing operation. Development allows longer lengths to be used and opens up new applications for use in sea water lines, air pre-heater tubes, and heat exchanger tubes.

Description: Method uses a porcelain enamel coated insert of light gage metal. Pipe is field cut by any procedure that gives a fairly square end. Cut end of each section is fitted with the insert. With the insert in place, ends of two pieces of pipe to be joined are brought together and welded with an oxyacetylene torch.

Heat of welding operation fuses

Stainless Steel is first choice for all new equipment in



LIQUIDS are drawn from Stainless Steel storage tanks into this single-effect Stainless Steel evaporator. Vapors condense in Stainless evaporator, a portion of which may be seen above and to the right of the operator.



STAINLESS STEEL CENTRIFUGE is being charged with slurry from a Stainless tank. Crystals are separated from the mother liquor here and plowed out of the centrifuge. The centrifuge was fabricated by the American Tool and Machine Company of Boston, Mass.



DRIED CRYSTALS enter this Stainless Steel comminuting machine through a Stainless steel hopper. Ground crystals are then packed for shipment. The comminuting machine was built by The W. J. Fitzpatrick Company, Chicago.

Best choice among metals

ent in this plant in the last 10 years

The Fine Chemicals Division of Nopco Chemical Company, Inc., Harrison, N. J. has found Stainless Steel equipment to be a highly satisfactory answer to many of the problems encountered in its processing operations.

Purity is a watchword at Nopco—a producer of ingredients for pharmaceutical products. This requires complete freedom from contamination due to corrosion, and Stainless Steel's superior corrosion resistance meets this requirement fully.

Stainless Steel's bright, smooth surface also aids greatly in maintaining cleanliness. Foreign matter that

might go unobserved on a darker, duller surface is easy to detect—and is easily removed.

Stainless Steel fills Nopco's needs so well that Louis T. Rosenberg, Production Manager of the Fine Chemicals Division, points out, "There has not been a major piece of equipment installed in this depart-

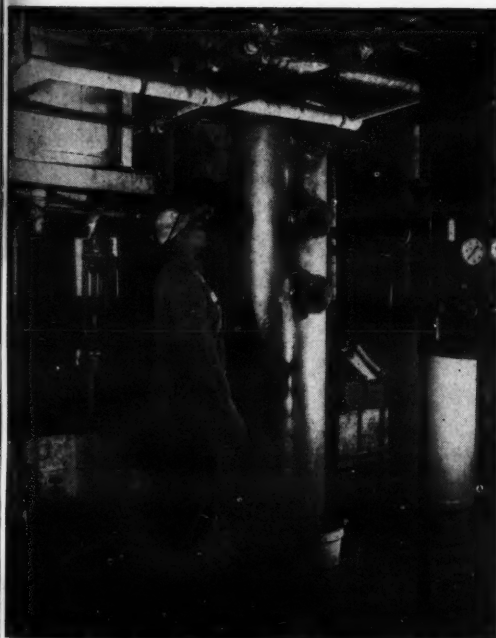
ment during the past 10 years that has not been constructed of either Stainless Steel or glass."

The benefits of Stainless Steel can play an important part in improving the efficiency of your processing line. And, wherever you use it, be sure it is perfected, service-tested USS Stainless Steel.

UNITED STATES STEEL CORPORATION, PITTSBURGH • AMERICAN STEEL & WIRE DIVISION, CLEVELAND
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO • NATIONAL TUBE DIVISION, PITTSBURGH
TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA.
UNITED STATES STEEL SUPPLY DIVISION, WAREHOUSE DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS STAINLESS STEEL

SHEETS • STRIP • PLATES • BARS • BILLETS • PIPE • TUBES • WIRE • SPECIAL SECTIONS



TWO STAINLESS STEEL ion exchange columns are used for purification of various organic solutions. They were designed and built by The Permutit Company, New York City.



A STAINLESS STEEL TURBA-FILM EVAPORATOR, built by Rodney Hunt Machine Co., Orange, Mass., is used for concentrating heat sensitive liquids.



CORROSION

glass coating of insert to glass lining of pipe. This precludes any possibility of corrosive liquids penetrating to steel base metal of pipe.

(For further information on pipe joining method contact Barrows Porcelain Enamel Company, Dept. CP, Langdon Farm & Pennsylvania RR, Cincinnati 13, Ohio . . . or check CP 1671 on handy form, pages 2 and 3.)

Protection to iron, steel, aluminum, provided by zinc coatings . . .

resists corrosion and abrasion

Finely divided zinc dust is contained in coatings designed for protecting iron, steel, and aluminum surfaces. Quantity of zinc varies in formulations with alkyd, phenolic, or other vehicles. Some coatings need to be baked and others do not. One can withstand dry heat temperatures up to 1000°F. Coatings can be applied by spray, brush, or dip.

(Zincate coatings are produced by Industrial Metal Protectives, Inc., Dept. CP, 401 Homestead Ave., Dayton 8, Ohio . . . or for more information check CP 1672 on handy form, pages 2 and 3.)

How to line tanks with welded membrane

Information on how manufacturer's welded membrane can be utilized as a lining for steel tanks is covered in four-page bulletin. Membrane is fabricated from Kel-F. Photographs of the assembly and installation of the membrane are presented. Charts on physical properties, temperature range, and chemical resistance of material are also included.

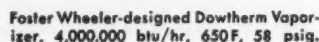
Bul K-10 is issued by Process Equipment Div., The U. S. Stoneware Co., Dept. CP, 5500 Tabor, Akron 9, Ohio. Specify CP 1673, pages 2 and 3.)

For more information on product at left, specify CP 1674 . . . see information request blank between pages 2-3.

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1954

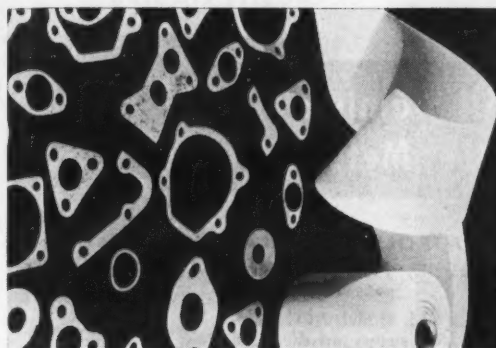
*is the technical knowledge needed
to design a heating system right*



Foster Wheeler's specialized technical knowledge is your best assurance of the *cost reduction* and *product improvement* you are seeking as an economical solution to your critical processing problem. Foster Wheeler Corp., 165 Broadway, New York 6, N. Y.

FOSTER WHEELER

AUG



Gasket liners cut from tape resist corrosion

to fit tightly over sharp corners and bends to make a firm, secure covering. It is available in widths up to 12", with thicknesses varying from 0.002 to 0.125".

(Kelon-T tape is available from Dept. O, W. S. Shamban & Co., Dept. CP, 11617 W. Jefferson Blvd., Culver City, Calif. . . . or for more information check CP 1678 on handy form, pages 2 and 3.)

Aerosol packaging of inhibitor facilitates protection of metal parts . . .

prevents corrosion when sprayed on equipment

Uses: For prevention of corrosion on metal parts and equipment, it is often used on machines prior to shipment or on units in storage.

Features: Packaging of the inhibitor in an aerosol can makes it easy to spray the fine powder on equipment in a uniform coating.

Description: Aerosol can contains the inhibitor, VPI (vapor phase inhibitor). Patent for the chemical combination of amine nitrites is held by the Shell Development Company. This self-spraying form of inhibitor is known as Kerpro VPI. Material provides reasonably long protection from corrosion without benefit of barriers and lasts even longer in containers with closures.

(Kerpro VPI is product of Robert J. Kerr Chemicals, Inc., Dept. CP, P. O. Box 443, Park Ridge, Ill. . . . or for more information reader may simply check CP 1679 on convenient Reader Service slip between pages 2 and 3.)

Determine proper fluoridation dosage in terms of fluoride ion, sodium fluoride, sodium silicofluoride, or hydrofluosilicic acid. Consult handy nomograph on page 190.



consider:

Corrosion Resistance and Analyses

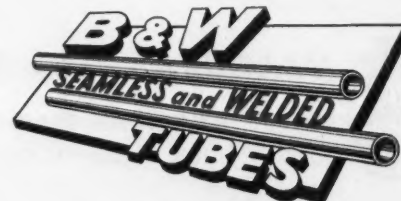
As chromium and nickel provide corrosion resistance in stainless steel, it follows that 18-8, 18-8 Cb, 18-8 ELC and 18-8 Ti, having similar chromium and nickel content, should have the same corrosion resistance. Exposure in certain types of service, however, may prove otherwise.

If tubing of these materials is field welded without subsequent heat treatment, or operated intermittently

at high temperatures, there will be a difference in corrosion resistance. The 18-8 grade may lose its corrosion resistant properties while the other three grades maintain theirs. This is because of slight differences in chemistry—5 parts in 10,000 in carbon content or the addition of 5 to 7 parts in 1,000 of columbium or titanium. Thus, your particular end use service condition, in addition to the basic cost of materials, should dictate which grade to use.

For virtually any application—pressure or mechanical—B&W can provide either seamless or welded stainless tubing in any number of grades, in a broad size range. Help in obtaining the best stainless tubing for your applications is available through B&W Regional Sales Offices and a nationwide network of experienced tubing distributors. Mr. Tubes—your link to B&W—will be pleased to furnish detailed answers to your stainless tubing problems.

THE BABCOCK & WILCOX COMPANY
TUBULAR PRODUCTS DIVISION
Beaver Falls, Pa.—Seamless Tubing; Welded Stainless Steel Tubing
Alliance, Ohio—Welded Carbon Steel Tubing

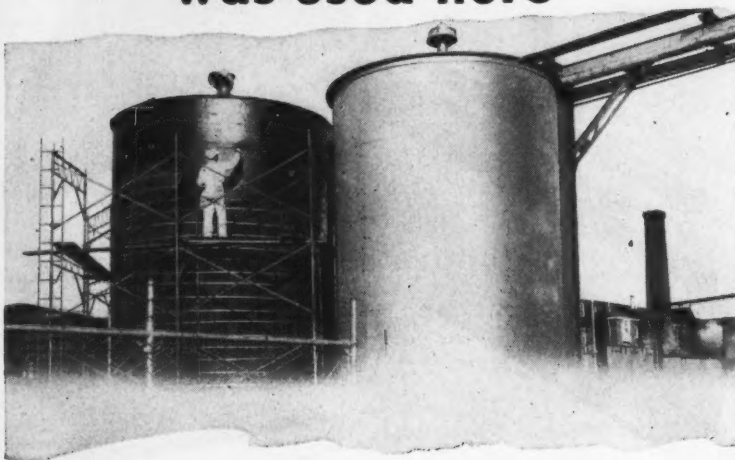


TA-1812(SSP)

When inquiring check CP 1680 on handy form, pgs. 2-3

VALDURA GILSOMASTIC

was used here



because it's made with
GILSONITE

99½% PURE NATURAL ASPHALT...

**NATURE'S PERFECT
PROTECTION AGAINST
THE ELEMENTS AND
INDUSTRIAL FUMES!**

... and because it's formulated so that just one
coat will provide a tough and durable film
AS THICK AS 8-10 COATS

OF ORDINARY PAINT!

If you'd like to know more about Gilsomastic and other items in Valdura's complete line of specialized maintenance products, or if you'd like help with a particular problem, just state your wishes on your regular letterhead and mail to the address below. Your inquiry will be treated as an invitation to provide service ... not as a license to exert selling pressure!



VALDURA HEAVY DUTY PAINT DIVISION

AMERICAN-MARIETTA CO.
101 E. Ontario St., Chicago 11, Ill.

When inquiring check CP 1681 on handy form, pgs. 2-3

CORROSION

**Most chemicals resisted
by nylon and Dacron
filter felts...**

items are graded for porosity

Inertness to most chemicals is provided by group of nylon and Dacron filter felts. Items are graded for porosity and need no cloth backing support.

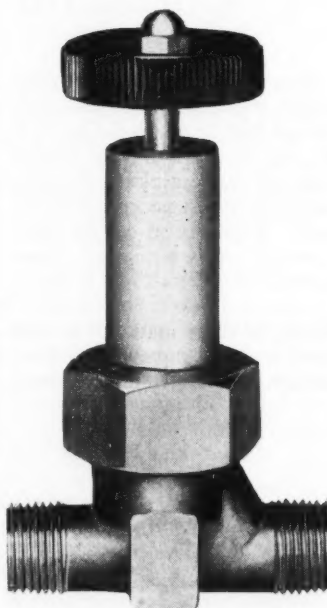
(Filtaweb Felts are available from Brosites Products Corp., Dept. CP, 50 Church St., New York 7, N. Y. ... or for more information check CP 1682 on handy form, pages 2 and 3.)

**Small bellows valves
made of stainless
lessen leakage...**

back-seating feature useful
for corrosive fluids

Uses: For highly corrosive service, high vacuum work, mass spectrometry, and other applications.

Features: Design provides a low leakage rate across the seat and into the valve (less than .001 micron CFH). Another advantage is the back-seating feature, especially useful in corrosive fluid applications, in event of a bellows rupture.



Stainless steel bellows valves
have Teflon seat and gasket

NOW YOU CAN HAVE **METERED
SURETY** IN HANDLING
CORROSIVE LIQUIDS

**All Stainless
Steel Meter**



**CONTROLS FORMULAS,
COSTS, INVENTORIES**

Rockwell Model 2-BC stainless steel meters provide indisputable records for the quantities of corrosive liquids used in mixing formulas. They provide basic accounting facts for accurate cost identification; for inventory controls; for tax analysis purposes.

These meters are constructed *inside and out* of stainless steel. Rated capacity 100 gpm. Quantity control registers and electrically actuated remote registration systems are available. Described in bulletin OG-403. Write Rockwell Manufacturing Co., Dept. A-5403R Pittsburgh 8, Pa.

Rotocycle meter, cut away
to show the all-revolving
rotor construction.

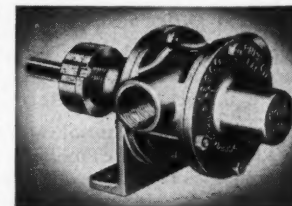
YOU CAN RELY  ON ROCKWELL

ROCKWELL INDUSTRIAL METERS

When inquiring check CP 1683 on handy form, pgs. 2-3

**JABSCO STAINLESS STEEL PUMPS
SOLVE CORROSIVE PUMPING PROBLEMS**

**Designed and Engineered
for Chemical Applications**



Jabsco's complete line of self-priming, corrosion-resistant pumps answer a multitude of pumping needs. Models 2810 (1" pipe size), 2870 (½"), and 2690 (¾") have all metallic parts of Type 316 stainless steel. Shafts are supported by oversize, replaceable carbon bearings, stuffingbox type shaft seal with chemical resistant packing. Pumps function perfectly even with dry suction lifts approaching 15', no foot valve is required. When primed, they suck as high as 26'. Jabsco pumps have no metal-to-metal contact, no gears to wear or become noisy. The exclusive "camflexed" Neoprene Impeller is the only moving part. This tough, long-lived, wear resistant impeller is self-lubricated by the liquid pumped. Jabscos are economical, low in first cost, and trouble and maintenance free, even under continuous operation. May be mounted at any angle to pump thin or viscous liquids, and can be operated efficiently at low or high speeds. At 10' head and 1750 RPM, Model 2810 delivers up to 27 GPM, Model 2870 up to 10 GPM, Model 2690 up to 4 GPM. Other stainless steel models also available with ball bearings and mechanical seals. For complete information on how Jabsco can solve your pumping problems, write Jabsco Pump Company, 2031 North Lincoln Street, Burbank, California.

When inquiring check CP 1684 on handy form, pgs. 2-3

CHEMICAL PROCESSING

CORROSION

Description: Valves, designated the 440 Series, have an arc-welded bellows assembly of 18-8 stainless steel. Valve body is 316 stainless steel, with Teflon seat and gasket. Seat and bellows assembly are replaceable. Tests show this assembly capable of withstanding more than 100,000 cycles at low pressure in non-corrosive applications.

Pipe sizes available are $\frac{1}{8}$ to $\frac{1}{2}$ ", with $\frac{1}{4}$ and $\frac{1}{2}$ " Swagelok tube ends. On special order, the $\frac{1}{8}$ and $\frac{1}{4}$ " valves are available with air-operated motor for remote operation.

(Bellows valves are product of Hoke, Inc., Dept. CP, 145 S. Dean St., Englewood, N. J. . . . or for more information check CP 1685 on the convenient Reader Service slip which is located between pages 2 and 3.)

Nickel hardfacing alloys applied in powder form with spray unit . . .

provides accurate flame control and improved safety

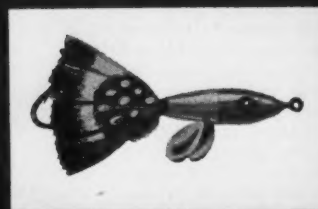
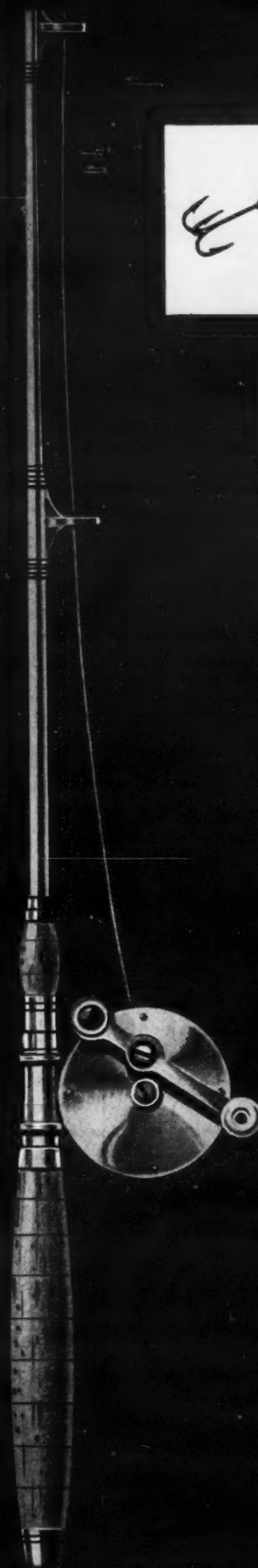
Uses: For applying hardfacing coatings.

Features: Unit is particularly adapted to application of nickel-base wear and corrosion-resistant alloys to steel, stainless steel, and some cast iron and copper alloy parts.

Description: Model C metal spray unit has oxygen and acetylene valves which give accurate flame adjustment and make operation safe. Unit is designed like a pistol, which can either be held in hand or mounted in holder. Powder and gas flow are controlled by trigger handle.

(Metal spray unit is product of Wall Colmonoy Corp., Dept. CP, 19345 John R. St., Detroit 3, Mich. . . . or for more information reader may simply check CP 1686 on the convenient Reader Service slip which is located between pages 2 and 3.)

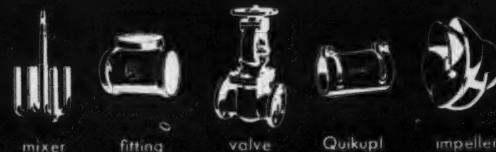
For more information on product at right, specify CP 1687 . . . see information request blank between pages 2 - 3.



this combination will help you **Relax!**

There will be a fly on the rod—not in the ointment, when you turn those stainless steel casting, valve and fitting problems over to us. Thirty years of high alloy experience, and complete facilities for design, production and research is a combination that guarantees quality and service.

When you hook up with Cooper Alloy you've cast your line for some real peace of mind. Our stainless steel products are tops in quality—use them with confidence, and relax.



COOPER ALLOY

THE COOPER ALLOY FOUNDRY CO. • HILLSIDE, N. J.
Los Angeles, San Francisco, Oakland, Houston, Chicago, Detroit, Philadelphia, Hartford
Leading producers of STAINLESS STEEL valves, fittings and castings

At The Atlantic Refining Company's plant in Philadelphia, alkyl aryl sulfonates are evaporated in Monel evaporators. Atlantic uses corrosion-resisting Monel in condensers on benzene distillation equipment, piping, neutralization tank, settler, soap evaporators, solvent extraction equipment, steam coils in Ultrawet storage tanks and in tanks for storing 50% caustic soda.



How Monel protects against corrosion in Synthetic Detergent Manufacture

It's no wonder that The Atlantic Refining Company, one of the largest detergent manufacturers in the country, relies heavily on corrosion-resisting Monel to protect important process equipment items against corrosion and to insure the high purity of its synthetic detergent "Ultrawet."

For there are plenty of places where corrosion can take hold in the manufacture of alkyl aryl sulfonate detergents.

Among the corrosives which occur in the process are: sulfuric acid, sulfonic acids, dilute hydrochloric and hot caustic soda. In addition there is the problem of contamination: even slight traces of metallic corrosion products in a detergent may cause unwelcome odors and

instability.

Service in many fields has proved that Monel is often the most economical material where a strong, tough alloy is needed to handle acids, alkalis and salts with a minimum of corrosion or contamination. Monel is an easily-formed structural material whose corrosion resistance is not impaired by welding.

If you would like to know whether Monel or one of the other Inco Nickel Alloys can help solve your corrosion problem, write to Inco's Corrosion Engineering Section. Our Technical Bulletin T-5 "Engineering Properties of Monel and 'R' Monel" is yours for the asking.

The International Nickel Company, Inc.
67 Wall Street New York 5, N. Y.



Inco Nickel Alloys

MONEL® • "R"® MONEL • "K"® MONEL • "KR"® MONEL • "S"® MONEL
INCONEL® • INCONEL "X"® • INCONEL "W"® • INCOLOY®
NIMONIC® ALLOYS • NICKEL • LOW CARBON NICKEL • DURANICKEL®

When inquiring check CP 1688 on handy form, pgs. 2-3

CORROSION

Polyester bonded fiber glass prevents corrosion

Four-page illustrated bulletin describes how polyester bonded fiber glass products have solved a number of difficult corrosion problems in the chemical industry. This material was developed especially to meet the exacting requirements of ventilation systems. Material contains no cloth and will not delaminate. Physical properties and chemical resistance of the fiber glass are presented in tabular form.

Bul 54 is issued by du Verre, Inc., Dept. CP, P. O. Box 97, Hamburg, N. Y. When inquiring specify CP 1689 on the convenient Reader Service slip which is located between pages two and three.

Speed and safety furnished by non-corrosive flux for soldering . . .

non-ionizable product eliminates corrosion and electrical leakage

Uses: For soldering of copper, brass,terne plate, and tin plate.

Features: Flux is non-ionizable even under high humidity conditions. This factor eliminates both electrical leakage and corrosion. Material is safe and fast enough to solder on clean steel without pretinning. This action cuts down rejects on copper soldering.

Description: No. 8 Flux is rosin and alcohol fortified to suspend surface oxide on common metals. Neutral rosin residue is left which does not set up corrosive attack.

(No. 8 Flux is product of Farrelloy Co., Dept. CP, 1260 N. 26th St., Philadelphia 21, Pa. . . or for more information check CP 1690 on the convenient Reader Service slip which is located between pages 2 and 3.)

Effect of acids on tantalum and other metals

Eight-page bulletin contains condensation of a NACE technical paper in which the effect of acids on tantalum, titanium and other metals is described. Test method and corrosion by sulfuric, phosphoric, and nitric acids, and phenol are covered.

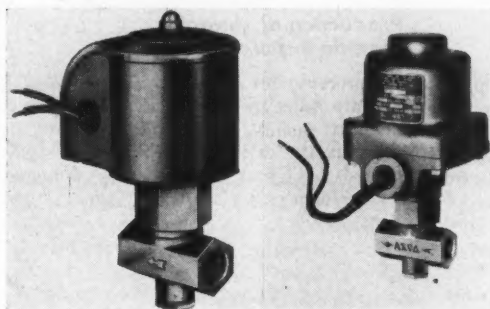
Technical paper, "Corrosion by Acids at High Temperatures," was written by R. F. Miller, R. S. Treseder, and Aaron Wachter, of Shell Development Co., Emeryville, Calif. Paper was published in "Corrosion," Vol 10, No. 1, 7-9 (1954) Jan.

Bul 2.705 is issued by Fansteel Metallurgical Corp., Dept. CP, N. Chicago, Ill. When inquiring specify CP 1691 on the convenient Reader Service slip which is located between pages two and three.

**Corrosive gases, liquids, and steam
up to 450°F can be controlled
by solenoid valves . . .**

one model is equipped with explosion-proof solenoid for hazardous locations

Two additions to manufacturer's line of solenoid valves are suitable for handling corrosive gases and liquids as well as steam — up to 450°F. Bodies of the valves are either steel or stainless steel. One model is equipped with explosion-proof solenoid for hazardous locations.



Of two solenoid valves available for handling corrosives, one (at right) is explosion-proof

Both valves are of the packless type, with no sliding glands or stuffing boxes. They are designed for normally closed operation, normally opened units being available on special order. Tight seating and positive closing (on normally closed valves) are assured by combination of impact, gravity, and force of closing spring. Design overcomes any tendency for valve to stick.

(Solenoid valves 8268 and 8269 are product of Automatic Switch Co., Dept. CP, Orange, N. J. . . . or check CP 1692, pages 2 and 3.)

**Severe corrosive conditions
successfully combated
by motor starters . . .**

Class I, Group D units protected by immersion of switches in oil

Uses: For refinery, pipeline, cement plant, paper mill, chemical processing, and similar applications where hazardous atmospheres and corrosive conditions are encountered.

Features: Oil immersion of switches furnishes protection against corrosion. In addition, it lubricates mechanism thoroughly and gives maximum protection against explosion.

Description: Valimotor starters are suitable for use with 2000 to 5000 volt motors. Actual rating is 50,000 KVA interrupting capacity.

(Valimotor starters are product of Electric Controller & Mfg. Co., Dept. CP, 2717 E. 79th St., Cleveland 4, Ohio. Check CP 1693, pgs. 2 & 3.)

This PYREX® pipe "Switchboard" does an unusual materials handling job

If you toured the pilot plant of Merck & Co., Inc. in Rahway, N. J., you'd see this glass pipe "Switchboard" in action . . . speeding the progress of new products from research toward early production.

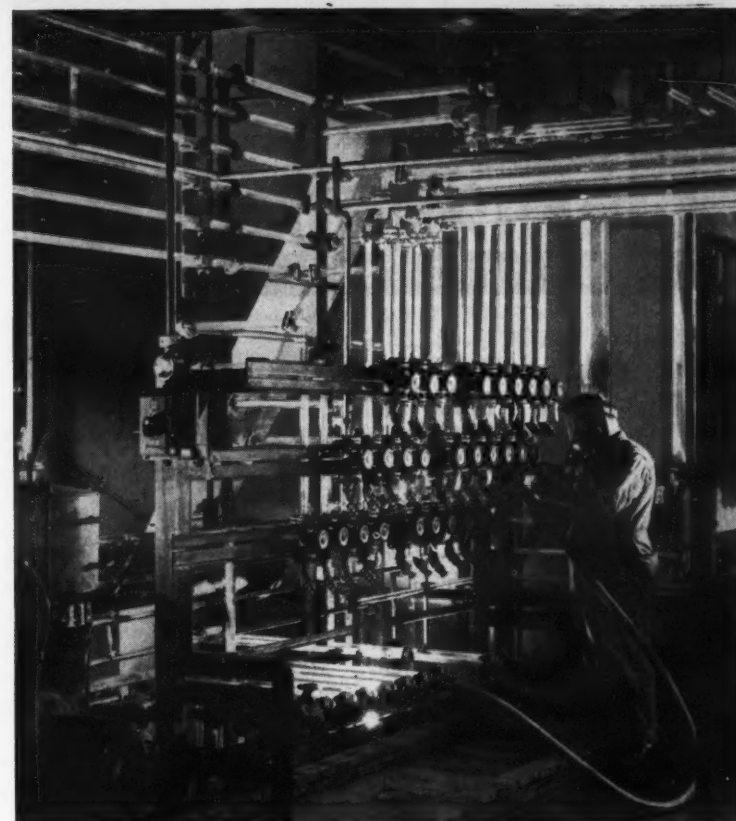
The system is constructed of one- and two-inch PYREX brand "Double-Tough" glass pipe arranged in circuits much like a telephone switchboard. Operators direct flow from various origins to a number of widely separated destinations just by adjusting valves located in pipe manifold stations similar to the one illustrated here.

This system provides the flexibility needed in handling the transfer of a constantly changing variety of chemicals from one processing stage to another. And Merck has constructed its PYREX pipe switchboard system so that it is instantly adaptable to handling materials with greatly different production cycles.

But why PYREX pipe?

Merck chose PYREX pipe for this complicated installation because only glass offers them all four of these necessary advantages:

1. **Non-Contamination**—PYREX pipe is chemically stable. It won't react with or contaminate the contents of the pipeline. It protects product purity.
2. **Corrosion Resistance**—PYREX pipe remains corrosion free even under



Operator at one of Merck's PYREX pipe "Switchboards" can cross-connect any of the glass pipelines in the manifold bank easily and quickly.

The pipes are easy to clean and can be quickly switched to handling any number of different chemicals.

the severest chemical service. It is unaffected by all acids except hydrofluoric.

3. **Clear Transparency**—Affords complete inspection at any and all points at all times. Trouble can't hide behind glass.
4. **Light Weight**—PYREX pipelines require a minimum of support.

Easy to clean . . . in place

A detergent run through PYREX pipelines followed by water or low pressure steam flushing, or both, generally removes all traces of past contents.

And PYREX brand "Double-Tough" glass pipe is durable. Experienced users report no breakage problems . . .

even with operating temperatures as high as 250°F. In addition; PYREX pipe can be installed by regular plumbers or pipefitters.

Let us show how PYREX pipe can help you

Perhaps this Merck installation suggests some PYREX pipe application for your plant where greater corrosion resistance, improved product purity, or visual inspection can reduce your operating costs or give you closer quality control. Why not discuss your problems with the nearest PYREX pipe representative—or mail the coupon below for personal attention or further information.

DISTRIBUTOR LIST:

BELMONT, CALIFORNIA
Glass Engineering Laboratories
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Macolaster Bicknell Company
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Corning means research in Glass

CORNING GLASS WORKS

38 CRYSTAL ST., CORNING, N. Y.

Please send me the printed information checked below.
"PYREX brand 'Double-Tough' Glass Pipe and Fittings" (EA-3) ☐ (A complete catalog)
"PYREX brand Glass Pipe in the Process Industries" (EA-1) ☐ (picture-pages of successful installations)
"PYREX brand Cascade Coolers" (PE-8) ☐ (A catalog)
Please have a PYREX pipe sales engineer get in touch with me ☐

Name.....
Company.....
Street.....
City..... Zone..... State.....

When inquiring check CP 1694 on handy form, pgs. 2-3

"Varec"

PULSE CODE

TELEMETERING SYSTEM

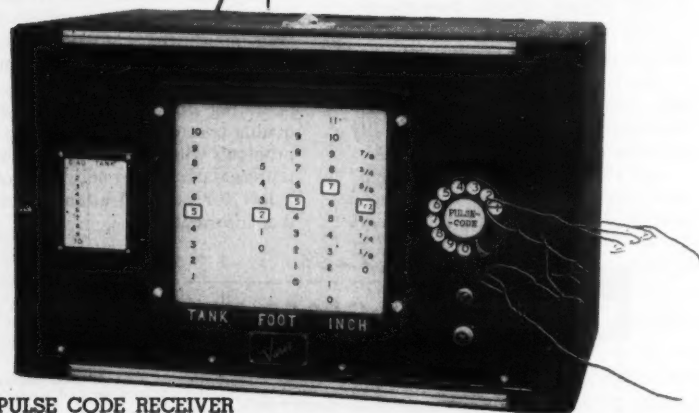
(PATENTS APPLIED FOR)

THE MOST MODERN DEVELOPMENT IN LIQUID LEVEL TELEMETERING!

The Vapor Recovery Systems Company, through years of research and development, has continuously improved remote liquid level gauging methods. Development has progressed from the single remote receiver unit to the more complex systems involving multiple tank farms and simultaneous readings at two or more points. Being well aware that the petroleum and chemical industries would one day demand much longer transmission distances, with even greater accuracy and dependability under all conditions, VAREC conducted an extensive study of the problems

involved. Many systems were built and tested exhaustively. Finally, the desirable features of each were combined into one system that provides the stability, accuracy and reliability required by the users — a liquid level remote gauging system that is extremely flexible in application, with distances limited only by available communication facilities. Vapor Recovery Systems Co. is proud to offer this new PULSE CODE telemetering system — the most modern development in remote gauging. Write for additional information.

SEE PULSE CODE AT THE
INSTRUMENTS SHOW IN
PHILADELPHIA, SEPT. 15-21
BOOTH: 757, 759, 761



PULSE CODE RECEIVER

"Varec"

THE VAPOR RECOVERY SYSTEMS CO.
COMPTON, CALIFORNIA

Cable Address: VAREC COMPTON
(Cal. U.S.A.) All Codes

961-1

When inquiring check CP 1695 on handy form, pgs. 2-3

briefs

from contemporary publications

Materials for bolts in underground service

Potential measurements on the components of galvanic couples aid in predicting the suitability of various materials for bolts to be used in underground service. Some low-alloy ferrous materials are superior to steel or cast iron for the manufacture of bolts. Numerous photographs show how well the bolts resist corrosion when underground. Nine pages, 7 figures, 5 tables, 9 references. ("Journal of Research of the National Bureau of Standards," May, 1954, page 265.)

Production of hardboard and utilization of bark

Hardboard can be formed from bark with suitable resins, followed by hot pressing. Conversion of redwood bark fibers into low-density insulating board is described. Three pages. ("Paper Industry," April, '54, p. 56.)

Electrical resistance of rubber loaded with carbon black

For rubber compounds loaded with carbon black, data on surface area, resistivity, and hydrogen content are correlated in a new equation that holds for acetylene blacks, Pelletex, Spheron 9, and Philblack, but not for Thermax and CK-4. Four pages, 5 figures. ("India Rubber World," Jan. 1954, page 485.)

Pressure drop data are given for non-Newtonian fluids

A study of laminar flow of non-Newtonian fluids aids in correlation of pressure drop data, design of pipe lines, and construction of a model for the purpose of obtaining information on a full-scale prototype. Eight pages, 2 tables, 13 figures, 10 references. ("Chemical Engineering Progress," Jan. 1954, page 27.)

Production of chlorine dioxide in pulp mills

Six processes for generating chlorine dioxide in pulp mills are compared with respect to quantity, quality, capital cost, raw materials, maintenance, ease of control, and explosive hazards. Eight pages, 2 tables, 6 figures, 14 references. ("Tappi," April, 1954, page 129.)

Synthetic lubricants

The physical and chemical properties, stability, lubricity, solvent action, and flammability of monobasic and dibasic acid esters, phosphate and silicate esters, silicones, and polyglycol ethers are discussed. Applications and costs of the synthetic lubricants are covered. Nine pages, 4 tables, 48 references. ("Lubrication Engineering," April, 1954, page 65.)

Increased productivity in the paper industry

This symposium is concerned with increased productivity as applied to woodyard operations; barking and chipping; groundwood, sulfite, sulfate, and semichemical pulping; liquor and by-products recovery, refining of pulp, the paper machine, drying and ventilation; and instrumentation. Twenty-eight pages, 2 tables, 29 photographs. ("Paper Industry," May, 1954, page 137.)

Nuclear studies

This collection of papers is really a symposium on nuclear engineering. Topics covered are: heavy water, uranium, thorium, nuclear engineering, materials for nuclear reactors, design of power reactors, homogeneous reactors, radioactive waste, polymers of ethylene, and decontamination of a Canadian reactor. Fifty-six pages, 51 figures, 37 tables, 4 photographs, 72 references. ("Chemical Engineering Progress," May, 1954, page 217.)

How to eliminate odors in a sulfate pulp mill

A plant to eliminate mercaptan from a sulfate pulp mill is described. Operations are: 1) use of indirect condensers for relief and blow gases, 2) use of condensed water as dilution water in chlorinating towers, 3) combustion of non-condensable and natural gas, and 4) cooling of smoke to the dew point followed by oxidation with chlorine. Five pages, 4 figures, 4 tables. ("Tappi," May, 1954, page 201.)

Air conditioning textiles

Air conditioning as it pertains to comfort and to the proper atmosphere for the processing of textile fibers is discussed. A psychrometric chart is presented. Four pages, 3 figures. ("Refrigerating Engineering," May, 1954, page 33.)

Nuclear power in industry

Dr. Smyth, of the Atomic Energy Commission, discusses the following aspects of nuclear power: neutron economy, radiations effects, heat transfer, control, chemical processing of fuel, Hanford reactors, breeding, reactor program, past results, and present status. Costs are also covered. Nine pages. ("Combustion," April, 1954, page 67.)

Aeration of water

The theoretical principles of aeration of water are discussed under the headings of types, fundamental concepts, gas transfer rates, aeration equations, gas exchange rate factors, and removal of hydrogen sulfide. Twenty-four pages, 6 figures, 2 tables, 47 references. ("Journal of the American Water Works Association," April, 1954, page 353.)

Scheduling analytical tests

Use is made of a Product-Trol control board in scheduling analytical tests and in maintaining daily reports of status. Colored plastic pegs are employed for visual aid. This system obviates the need for written assignments of work. Four pages, 4 figures, 1 table, 5 references. ("Analytical Chemistry," April, 1954, page 647.)

Pumps and pipe fittings

This discussion of radioactivity problems that concern high-pressure, water-cooled, nuclear plants is presented under the headings of equipment shielded, permissible leakage, selection of materials, and design of components. Five pages, 3 tables, 4 figures. ("Heating, Piping, and Air Conditioning," May, 1954, page 140.)

Materials at high temperatures

This survey of materials for use above 300°F covers iron, steel, light metals, ceramics, plastics, copper and copper alloys. Extensive tables of properties are given. Sixteen pages, 13 tables, 6 photographs, 11 references. ("Materials and Methods," April, 1954, page 117.)

Continuous measurement of dissolved oxygen

For continuous determination of the concentration of oxygen dissolved in water, a discussion of the construction and use of dropping mercury and rotating platinum electrodes is supplemented with calibration curves. Three pages, 6 figures, 10 references. ("Instruments and Automation," Jan. 1954, page 128.)

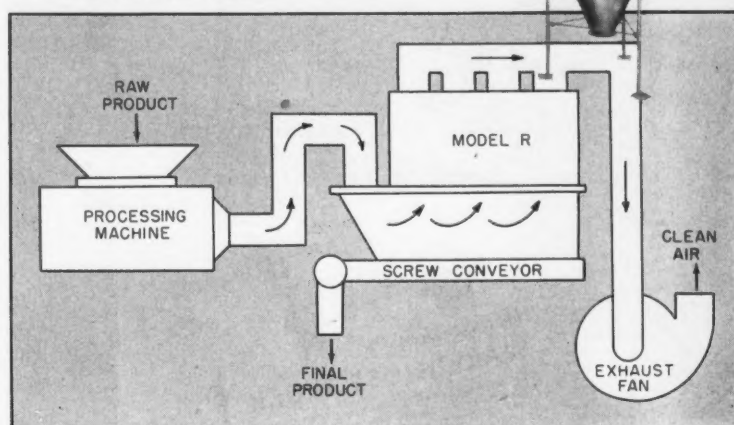
How to evaluate lubricants in powder metallurgy

A simple method for evaluation of lubricants in powder metallurgy is described. Experimental work can be minimized through use of a series of mathematical relationships for predicting results. Four pages, 5 figures, 7 references. ("Journal of Metals," May, 1954, page 515.)

Internal coating for pipes

Old aluminum and old and new steel pipes can be coated internally and in place with a plastic lining. Corrosion products are scraped off and coating material is applied between two plugs that are moved through the pipe under air pressure. Perfect results are not obtained with badly corroded pipes. A coating thickness of 5 mils is recommended. Five pages, one figure. ("Corrosion," May, 1954, page 142.)

"Critical" Dust Problem Solved



A leading chemicals manufacturer wished to improve his method of collecting a dry bulk compound from a large-scale processing operation.

As the load was extremely heavy — approximately 100 grains of product dust per cu. ft. of exhaust air — a rugged, automatic, self-cleaning dust collector was a "must". To handle the air volume of 10,000 CFM exhausted from the processing machine, a Model "R"-48-8-4 AEROTURN Dust Collec-

tor was selected and installed. The collector, having four, 48" diameter filter elements was mounted on the factory roof, thus used no valuable manufacturing space.

Designed specifically to handle extremely heavy dust loads, the Model "R" AeroTURN Dust Collector combines bulk preseparation with high efficiency, reverse-air-jet filtration, thus is the effective and economical collector for all heavy dust loads.

* * *

Send today for our new Model "R" brochure containing complete engineering data.

* Manufactured under
Hershey Patent Rights
Other patents pending



**TURNER
&
HAWES
ENG. CO. Inc.**
87 Gardner Street
West Roxbury 32,
Massachusetts

Name _____
Address _____
Company _____

AEROTURN

When inquiring check CP 1696 on handy form, pgs. 2-3

CONSULT FOR THE BEST

PS Materials HANDLING EQUIPMENT



Item B-426
\$6720

STOCK CHECKER'S TRUCK

Designed to handle a large variety of items, or parts. Three steel shelves with 1" flanges all around. Floor clearance 9 1/2". Overall height to top shelf 42 1/4". Top of table 50" 44" long, 20" wide. All steel welded construction. Semi-crated approx. 190 lbs.



Item S-987
\$11550

Heavy Duty WAREHOUSE TRUCK

Use anywhere heavy loads are moved and rubber lined wheels are desired. 54" long, 28" wide, 42" high at handle. Top of platform 14" off floor. Welded construction. Heavy 3/4" plate. Two swivel wheels at handle end. Approx. wt. 300 lbs.



on wheels
Item NS-415M
\$6775

UTILITIES RACK

(Roller bearing, 6" x 2", all-metal wheels).

Item NS-415R
\$7020

(Ball bearing, 8" x 1 1/2", rubber-lined wheels).



Item NS-298
\$5115

HAND DUMP TRUCK

Reinforced heavy sheet steel, 1/2 cubic yard, capacity—two 8" semi-steel wheels and two 4" metal swivel casters. Wt. 125 lbs.

Item B-539
ALL METAL PALLET

Item C-485
Automatic END DUMP

Item S-708
Industrial DUST PAN

Item S-911
BARREL TRUCK
loads automatically

Item C-481
Sloped Bottom BOX and STAND

Item B-416
BARREL CRADLE

Item NS-364
SHEET STEEL GRAB

Item B-746
CORRUGATED BOX with legs

Item B-479
BARREL and BOX SKID

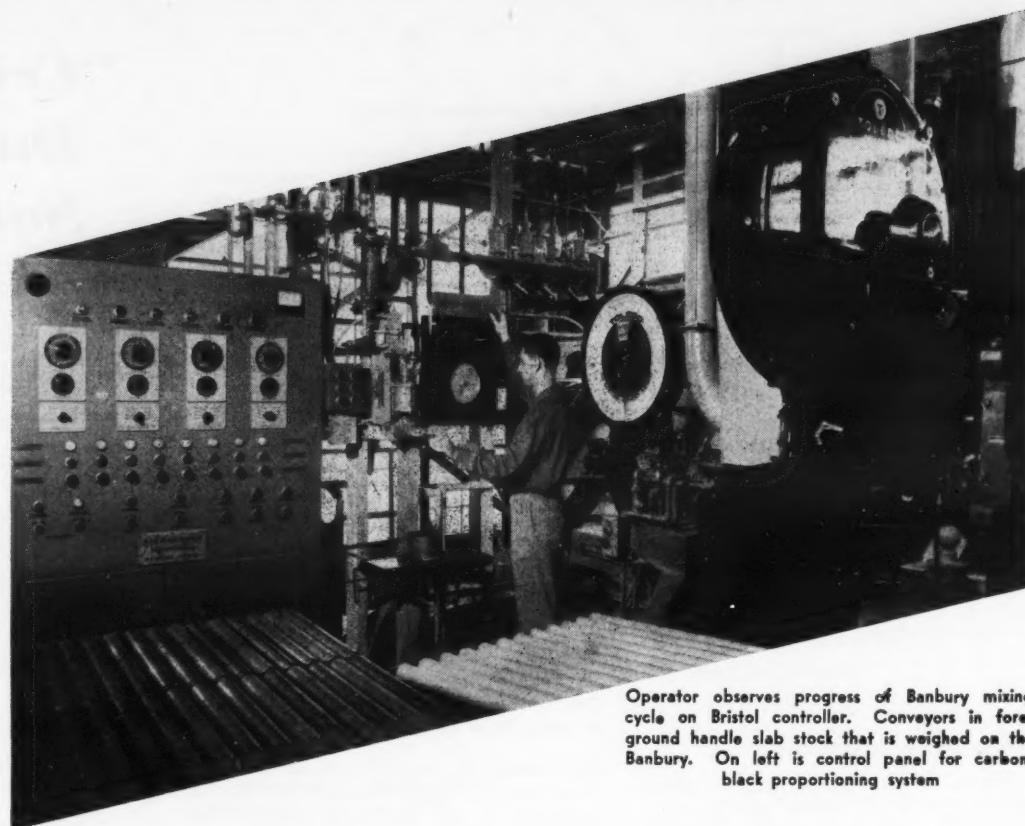
WHEN ORDERING always give "item" number. All PRICES are f.o.b. Detroit. Prices are subject to change without notice.

DESIGNED AND MANUFACTURED BY

Palmer Shile Co.

16016 FULLERTON AVE., DETROIT 27, MICH.

Write for catalog.



Operator observes progress of Banbury mixing cycle on Bristol controller. Conveyors in foreground handle slab stock that is weighed on the Banbury. On left is control panel for carbon-black proportioning system

Mixing costs at Harris Products Co. cut 58% in switch to . . .

automatic proportioning of carbon blacks

Automatic proportioning of carbon blacks helps cut mixing costs at the new \$1 1/2 million rubber-mixing installation of Harris Products Co., Milan, Ohio. Manufacturer of mechanical rubber goods, Harris Products formerly supplied raw materials, rubber and chemicals to a custom mixer to make into finished slab stock. By mixing all its own stock they now realize a 58% reduction in mixing cost.

Built as an addition to the regular processing plant, the new mixing room houses a 3A Uni-Drive Banbury mixer, scoop bins for pigments and accelerators, oil injection equipment, and scale and conveyors involved in proportion process.

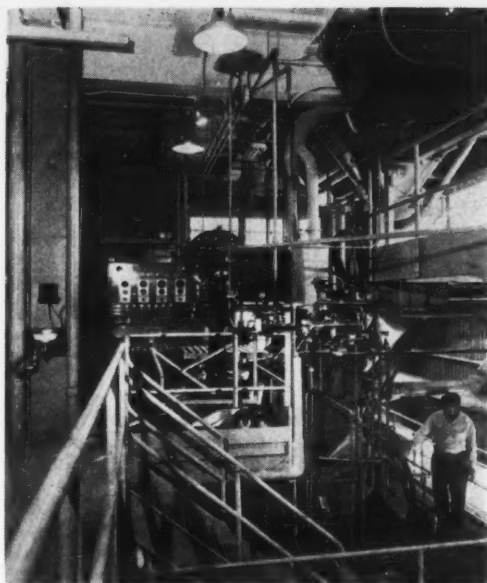
How Proportioning Works

Weights of different blacks desired for any mix are remotely selected on panel control board. After that, feeding from storage to scale, weighing and discharging from scale proceed automatically. Process repeats itself as many times as needed.

Besides improving weighing accuracies, the new installation can turn out 20 batches per hour. Three minute cycle includes a 28 second Banbury discharge time.

Screw-feeders delivering carbon black to automatic scales are run at slow speed to insure accuracy and are set to take up to 1 1/4 minute per weighing. In a mixing cycle, carbon black is screw-fed from individual bins to receiving hopper on the automatic scale. Stainless steel hopper has a vibrator to prevent material settling on the walls. Air-operated sealed radial gate on the scale discharges blacks into the Banbury.

As carbon black drops into weigh hopper its weight is indicated on large scale dial beside control panel. When selected weight is reached, dial triggers electric mechanism, and feeding stops. Another carbon black is then weighed until correct amount is indicated. Process is automatically repeated until formula is completed.

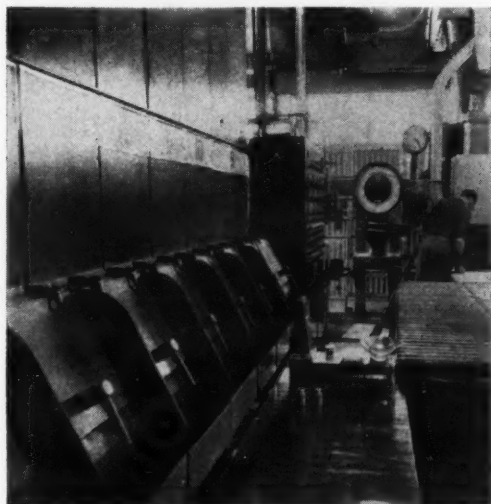


Inside mixing room, Plant Manager Paul Murphy checks Banbury. For cleanliness, all equipment is enclosed, pigment bins are capped

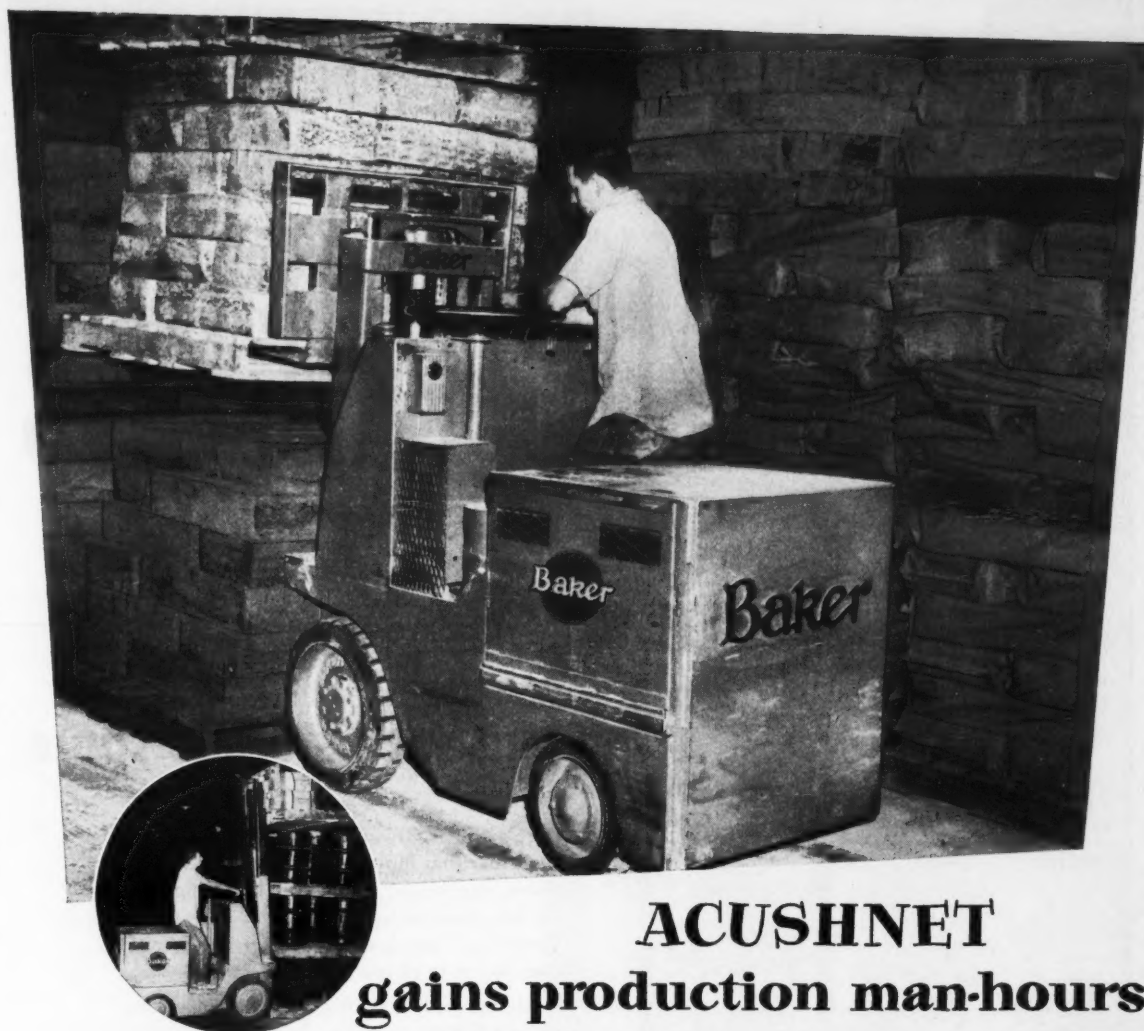
Weighing operation progress can be followed by observing lights on the panel. Control board also contains alarm signals. If anything goes wrong during proportioning, the system shuts down and alarm lights indicate where trouble is.

Two men operate the system. One operates small scale-car for weighing pigments. He also weighs slab rubber on a dial scale. Other man operates Banbury mixer from control panel and manually meters oils into the Banbury via pressurized discharge.

(Continued on next page)



Scoop bins storing pigments and accelerators are in foreground. Operator goes from bin to bin with the tram car, weighing out ingredients going into a particular formula. Scale dial in background gives weight of black in weigh hopper of automatic scale



ACUSHNET gains production man-hours while decreasing payroll!

○ Acushnet Process Company of New Bedford, Massachusetts, manufacturers of the well-known "Titleist" Golf Ball and supplier of precision-molded rubber parts to all of industry, has increased the productive efficiency of its labor force by mechanized handling with fork lift trucks thus eliminating backbreaking manual handling.

Last year the company purchased a Baker 4,000 pound fork truck for its receiving department. The truck's ability to enter a trailer and handle material on pallets was one of the factors in cutting freight handling costs in half. Time for unloading a typical 3,000 pound highway truck load of raw materials was reduced from 4 to 1¼ hours. The dependability of the Baker battery-powered truck, with practically no down-time and very little maintenance was another decided improvement

over the gas fork truck formerly on this job. Additional advantages are quietness of operation and greater speed in handling and maneuvering.

Acushnet handles each month about a million pounds of raw materials such as baled crude rubber, synthetic rubber blocks, and drum-loads of raw ingredients. All are now handled on pallets with fork trucks.

Write for your free copy of the "Baker Handling Library", a portfolio of case histories showing actual cost savings in a wide variety of plants. The Baker Raulang Company, 1208 West 80th St., Cleveland 2, Ohio.

Baker.
industrial trucks

When inquiring check CP 1698 on handy form, pgs. 2-3



Stack 'em up!



...and save storage space

Here's the lightweight, stainless steel acid container that builds a safe, compact stack—saves warehouse space and handling time for you. Bottom foot ring of the 15½-gallon Hackney Chemical Container fits snugly over top ring of lower barrel.

Designed with easy-to-grasp, full curled foot rings for safe, one-man handling and convenient pouring. Your name can be embossed on the bottom foot ring. Low tare weight reduces transportation costs. Stainless Steel protects your dangerous or perishable chemical products—eliminates breakage losses.

Write today for the Hackney Drum and Barrel Catalog.

Pressed Steel Tank Company

Manufacturer of Hackney Products

1463 S. 66th St., Milwaukee 14
52 Vanderbilt Avenue, Room 2087, New York 17
235 Hanna Bldg., Cleveland 15
936 W. Peachtree St., N.W., Room 126, Atlanta 3
208 S. LaSalle St., Room 796, Chicago 4
568 Roosevelt Bldg., Los Angeles 17
18 W. 43rd St., Room 19, Kansas City 11, Mo.



DOWNTOWN IRON WORKS, INC., DIVISION
144 Wallace Ave., Downingtown, Pennsylvania

CONTAINERS AND PRESSURE VESSELS FOR GASES, LIQUIDS AND SOLIDS

When inquiring check CP 1699 on handy form, pgs. 2-3

MATERIAL HANDLING

(Continued from preceding page)

While eight carbon blacks (ranging from micron sizes to pelletized black) are used in the overall operation, no more than four are used for any one formula. Consequently control panel has four weight selectors. Any one of the four can be used to select any of eight blacks. Important feature of control panel is provision for manual operation at any time, during any step of the proportioning operation.

(Automatic Proportioning System was engineered by Richardson Scale Co., Dept. CP, Van Houten Ave., Clifton, N.J. . . . or for more information check CP 1700 on handy form, pages 2 and 3.)

Handling of propane storage tanks made quicker and safer using woven wire slings . . .

gripper sling provides 20% saving in time

Handling bulky propane gas storage tanks can be difficult due to the weight and size of units. However, the Butler Mfg. Co. at its Galesburg, Ill., plant has minimized the problem by using woven wire slings for lifting the tanks.

Sling is fitted around middle of tank in a choke hitch. Free sling handle is attached to truck-mounted



Woven wire sling with conventional A-frame hoist eliminates need for two-part wire rope bridge slings in unloading propane gas storage tanks

A-frame hoist. Complete hook-up can be made in matter of seconds simply by pushing sling under tank body, passing male handle through female handle and hooking it to crane hook. This hook-up replaces former system of a two-part wire rope bridge sling with slip hooks placed in tank lifting loops.

Woven wire sling bends completely around circumference of load when rigged in choke hitch. This gives tighter grip and less slippage. Tanks shown in illustration are 42" x 17" and weigh 2380 lb empty. Woven wire sling 4 x 170" in a choke hold is used.

Storage is no problem during truck movement. Wire slings can be rolled into a coil and kept either in the cab or on the trailer. The woven wire construction eliminates kinking and tangling even after long use.

Walter E. Williams, Division Safety Engineer at the Galesburg plant, estimates that use of woven wire slings has resulted in a 20% saving in time, easier handling and safer operation.

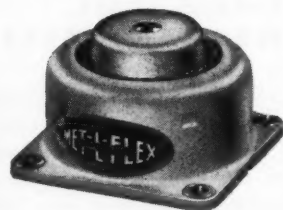
(Gripper Sling is a product of the Cambridge Wire Cloth Co., Dept. CP, 940 Washington Blvd., Cambridge, Maryland . . . or check CP 1701, pgs. 2-3.)

All-metal mount protects sensitive equipment from vibration . . .

units remain fully captive under stresses of 1400 lb minimum ultimate strength

Uses: For protection of sensitive equipment from shock, vibration present in mobile, industrial and packaging applications.

Features: Top and bottom buffer pads within housing create close limiting action. These buffers provide gradual increase in stiffness, plus high damping for positive, negative and radial motion and shock.



Vibration mount

Construction is of stainless steel and aluminum. Four models handle loads of 2½-6, 5½-12½, 10-20, and 18-40 lb. Axial to lateral stiffness ratio is 3:1 and minimum ultimate strength is 1400 lb.

(Model 1202 Mount is produced by Industrial Div., Robinson Aviation, Inc., Dept. CP, Teterboro, N. J. . . . or check CP 1702, pages 2 and 3.)

Description: Cup-design all-metal mount employs resilient cushioning material of metal wire. Cushioning material is inherently damped and will not pack down or wear out.

Construction is of stainless steel and aluminum. Four models handle loads of 2½-6, 5½-12½, 10-20, and 18-40 lb. Axial to lateral stiffness ratio is 3:1 and minimum ultimate strength is 1400 lb.

If you have a particular material handling problem . . .

check the handy Product Directory (pages 198 to 201) for a quick reference to ideas and equipment in this issue.

FLEXMOUNT Oscillating Conveyors

... so simple they can be installed from stock

And so effective they've cut conveying costs of many hard-to-handle materials to a new low

HERE'S a conveyor with so many exclusive advantages that it's whipped some handling problems that were previously real bottle-necks. What's more, FLEXMOUNT Oscillating Conveyors are *pre-engineered*—can be bought right "off-the-shelf" and installed with no delay for special engineering.

Stock sections in 8, 12 and 18 in. trough widths make up into any desired length. Congested locations offer no problem—FLEXMOUNT requires an opening only slightly larger than the size of the trough.

As for flexibility, these remarkable conveyors are in a class by themselves. High-sided, all-metal, leakproof trough can be fitted with dividers to handle two or more materials simultaneously without mixing. They can be steam or water-jacketed, made dust or gas-tight. Also easily adapted for screening and scalping.

Get complete information on FLEXMOUNT Oscillating Conveyors from your nearby Link-Belt office or distributor.

How Positive Action moves material

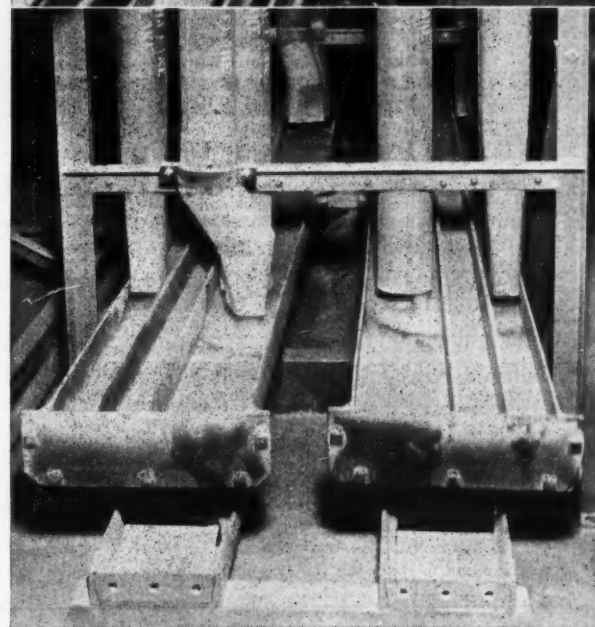
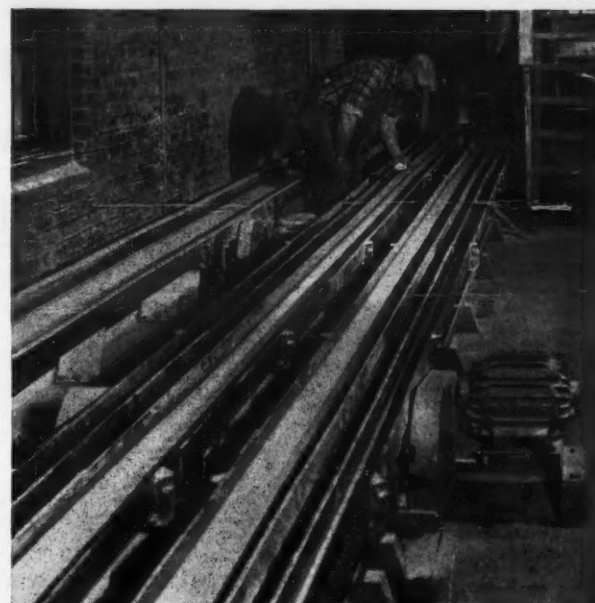


Positive-action, constant-stroke eccentric drive provides a powerful, yet gentle upward and forward oscillating motion. Large volumes of material are moved in a uniform, continuous flow, regardless of surges. Resonant spring action of resilient legs cuts power requirements to a minimum.

LINK-BELT

FLEXMOUNT OSCILLATING CONVEYORS

LINK-BELT COMPANY: Executive Offices, 307 N. Michigan Ave., Chicago 1. To Serve Industry There Are Link-Belt Plants, Sales Offices, Stock Carrying Factory Branch Stores and Distributors in All Principal Cities. Export Office: New York 7; Canada, Scarboro (Toronto 13); Australia, Marrickville, N.S.W.; South Africa, Springs. Representatives Throughout the World.



These three Link-Belt FLEXMOUNT Oscillating Conveyors are installed at a Michigan salt refinery. Each of the two partitioned units handles three grades of salt.

19,444

When inquiring check CP 1703 on handy form, pgs. 2-3



CLARK's L.P. - GAS CARLOADER*

1. Greatly reduces engine maintenance:

Eliminates unburned carbon deposits and crankcase dilution.
Eliminates fuel pump and complicated carburetor adjustments.

2. Eliminates obnoxious exhaust fumes:

L.P.-Gas provides almost perfect combustion, excellent for indoor operations.

3. Provides safe, efficient operation:

Vacuum ignition switch is interlocked with fuel line and manifold, impossible to spill fuel or load-up engine.

High compression head (8.5 to 1) gives maximum economy and power from high octane L.P. Gas.

Quickly demountable tank takes 3 minutes to change.

Stellite valves and seats prevent burning from high flame temperature of L.P. Gas.

Now you can have the advantages of liquified petroleum gas-powered (butane, propane) materials handling, with complete safety. For details, call your local Clark dealer, listed under "Trucks, Industrial" in the Yellow Pages. Or send the coupon for specifications.

*4000 lb. capacity, available with standard shift, Hydratork or Dynatork

Industrial Truck Division **CLARK EQUIPMENT COMPANY**
Battle Creek 9, Michigan ☐ Send details on LPG truck

CLARK
EQUIPMENT

Name _____
Firm _____
Address _____
City _____ Zone _____ State _____

When inquiring check CP 1704 on handy form, pgs. 2-3

MATERIAL HANDLING

Corrosive chemicals are handled with safety and dispatch in acid buggy . . .

eliminates waste and prevents damage often caused by spillage of acids and caustics

Uses: For in-plant materials handling and inter-plant hauling. Also facilitates quick, simple transfer of corrosive materials from bulk tanks.

Features: Equipped with a tank, rubber-lined inside and out, the wagon is built in accordance with ASME code #50 P.S.I.



Mobile corrosive chemical carrier transports 425 gal of material

Description: Wagon has a capacity of 425 gal. It is equipped with tow bar, wheels, four 50' lengths of acid hose with nozzles, overflow funnel, gage glass and fittings, and pneumatic controls. It also contains air filter, air gage and gage board and 75' of 1/2" diameter hose. Rubber-lined tank weighs 1500 lb and is mounted on 1300 lb frame.

(Model XB-425 acid buggy is manufactured by Automotive Rubber Co., Inc., Dept. CP, 12550 Beech Rd at P.M.R.R., Detroit 28, Mich. . . or for more information check CP 1705 on handy form, pages 2 and 3.)

Portable conveyor can be towed behind car or truck at high speeds . . .

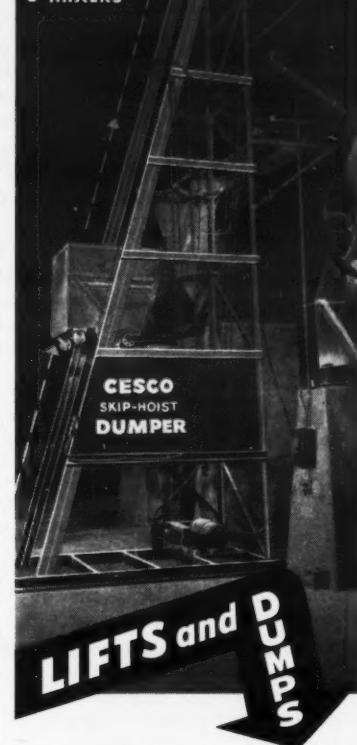
heavy duty flat belt unit reduces stooping and lifting

Uses: For handling bulk and packaged materials, especially materials which have a tendency to cake up on or corrode flat sheet steel plates.

Features: Unit can be easily trailed behind car or truck at high speed. It is possible to load or unload simply by reversing motor switch.

LOADS

- BINS
- BATCHERS
- MIXERS



BAGS, BULK, BARRELS, BOXES MECHANICALLY!

You can save time and money with increased safety by installing a CESCO Skip-Hoist Dumper. Lifts, upends and dumps 100 loads per hour with a lifting capacity range from 100 to 1500 lbs. Single and multi-purpose portable models in standard heights from 6 to 10 ft. Stationary models to 20 ft. Easy, safe operation from push button controls speeds up material handling and eliminates accidents.

Write for complete catalog . . .

ESSEX CONVEYORS, INC.
165 Franklin Avenue, Nutley 10, N.J.
COLSON EQUIPMENT & SUPPLY CO.
1317 Willow Street, Los Angeles 13, California

CESCO SKIP-HOIST **DUMPERS**

When inquiring check CP 1706 on handy form, pgs. 2-3

CHEMICAL PROCESSING

MATERIAL HANDLING



Portable conveyor can be used to load trucks and towed behind for unloading

Description: Heavy duty portable flat belt conveyor is designed to cut stooping and lifting to a minimum.

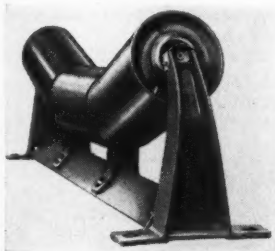
Units are available with detachable hopper, caster or two wheel undercarriage and either gasoline or electrically driven motors. Stationary models are also available.

(Conveyors are manufactured by Kay Enterprises, Department CP, Janesville, Iowa . . . or for more information concerning manufacturer's product, reader may simply check CP 1707 on the convenient Reader Service slip which is located between pages two and three.)

Reduction in maintenance is object of newly designed belt idler

Uses: For belt conveying.

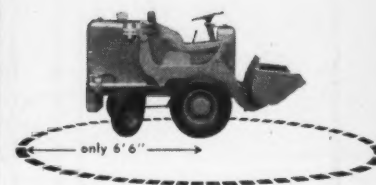
Features: Dual flexible contact seals perform double function of keeping out dirt and retaining grease. Design permits re-greasing from either end, through the shaft, grease reservoir, and shaft connectors.



Description: Extra heavy, electric-welded steel pipe form the belt carrying rolls, which are machine-beveled on ends to protect belt and workmen. Formed steel roll ends are pressed and welded into pipe shells. Roll removal can be made

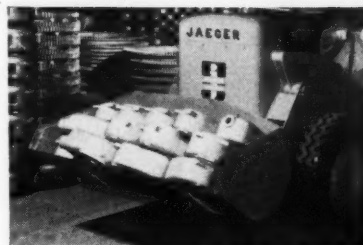
without loosening or removing stands. Series had 2° tilted end stands for engineered belt training. This tilt in direction of belt travel tends to give center roll of the troughing idler more control over belt.

(Series MD and HD idlers are manufactured by the Jeffrey Mfg. Co., Dept. CP, 956 N. 4th St., Columbus 16, Ohio . . . or for more information concerning manufacturer's product, reader may simply check CP 1708 on Reader Service slip which is located between pages 2 and 3.)

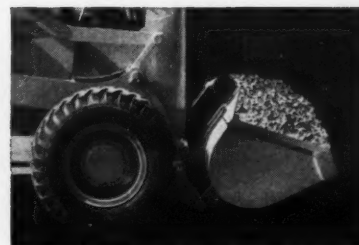


5" shorter turning radius (only 6'6") and faster speeds up to 13.88 mph in reverse, 7.66 forward.

MOVE HEAVIER LOADS . . . TRAVEL FASTER . . . TURN SHORTER, QUICKER . . . DUMP HIGHER AND FARTHER*



20% more lifting capacity (1200 lbs.).



Low level bucket tilt-back permits full bucket loading, better carrying.



Higher dumping clearance of 4'6" under lip; 6'8" under hinge. Longer reach of 2'7".

Latest Jaeger 12 cu. ft. Auto-Scoop speeds one-man handling of bulk material

To help you cut the cost of bulk material handling, here's a scoop loader that's been developed *specifically* for most efficient operation. The Jaeger Auto-Scoop brings you greater power, speed and maneuverability to get more work done.

Bigger lifting capacity helps you handle heavier loads. Shortest turning radius speeds work in narrow aisles, box cars, cramped quarters. Highest dumping clearance and longer reach give greater range of load placement. Faster speeds, both forward and reverse, cut maneuvering and travel time. Independent forward-reverse control permits instant changes in direction, quick get-away.

Boom arms crowd the bucket forward as it rises — provide fast digging, full bites. Front driving wheels are at the fulcrum of the load . . . heavy loads help move themselves by increasing tractive power. Power tilt-back enables operator to crowd into material and flip bucket back before hoisting, insures a full load, and makes possible lower bucket level position for better carrying. Simplicity and ease of control, and effortless hydraulic functioning, encourage faster operation.

For complete facts, send for Catalog L12-4 and name of distributor who sells and services the Jaeger Auto-Scoop in your city.

* Based on comparisons with well-known scoop loaders now in the field.

The Jaeger Machine Company, 616 Dublin Avenue, Columbus 16, Ohio

JAEGER LOAD-PLUS *auto-scoop*

AIR COMPRESSORS • PUMPS • MIXERS • PAVING MACHINES

Distributors throughout U.S. and Canada and Principal Cities of the World



For bigger work, 1 cu. yd. model, with torque converter and power steering, handles loads to 5,000 lbs. 2-wheel or 4-wheel drive.

When inquiring check CP 1709 on handy form, pgs. 2-3

Committee publishes brochure on material handling training

Brochure outlines objectives, details activities, and tells how The College-Industry Committee on Material Handling Education will operate. Jointly sponsored by the Material Handling Institute and the American Material Handling Society, the committee acts as a central source and authority on material handling education. It publishes lists of schools which offer courses on material handling subjects.

It also compiles lists of text books, booklets and films on material handling and sponsors seminars where executives of manufacturing and user companies can discuss educational problems with professors in this field.

Brochure on Material Handling Education can be obtained from Irving Footlik, Secretary, College-Industry Committee on Material Handling Education, Dept. CP, 8444 S. Yates Ave., Chicago 17, Ill. When inquiring reader may simply specify CP 1711 which is located between pages two and three.

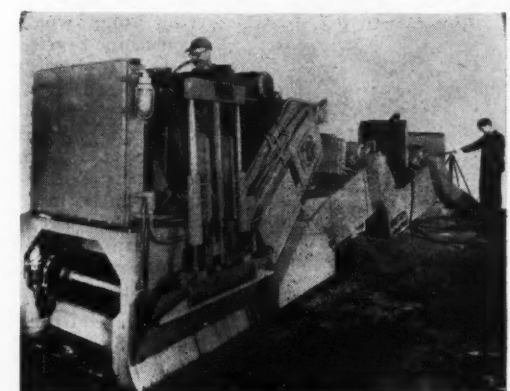
Unloads box car of bulk material in twenty minutes . . .

unit driven by caterpillar tracks completely empties box car in a single pass

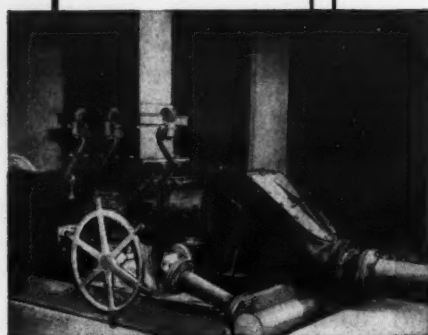
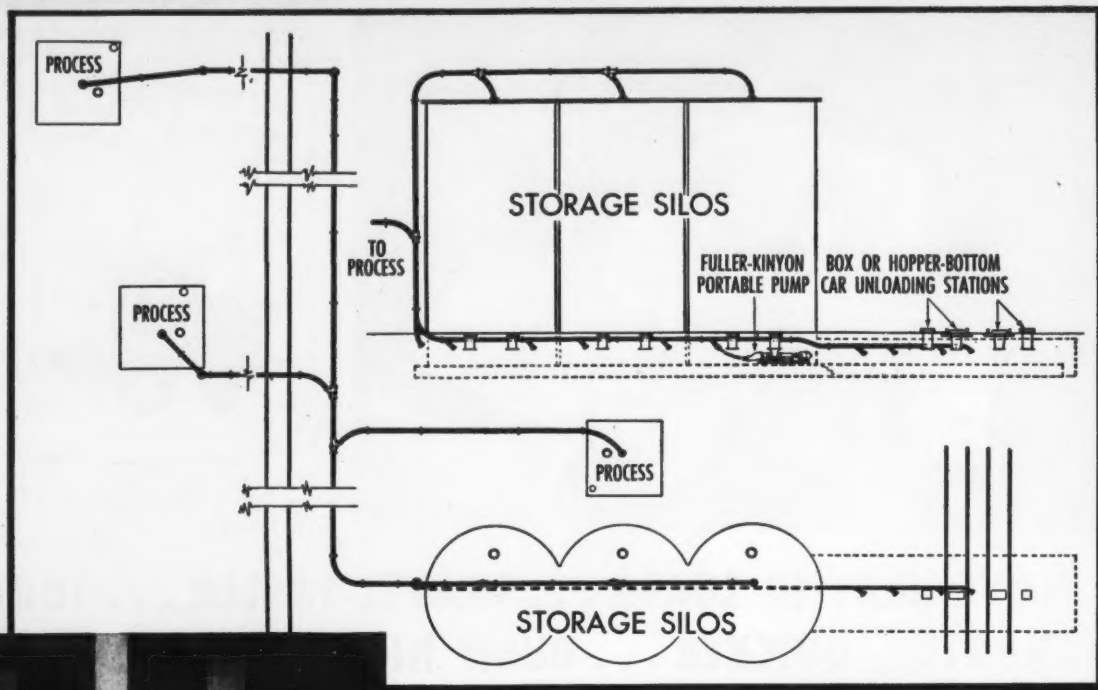
Uses: For unloading bulk materials from box cars. It is adaptable to any free flowing bulk material such as grain, gravel, crushed stone, sulphur, salt, sugar, etc.

Features: Adjustable side arms permit machine to operate through full width of car as it proceeds. Thus, when machine reaches end of car in one pass, that end of car is empty.

Description: Front unit consists of flight conveyor which is fed automatically from both front and sides. It conveys material through articulating units of belt conveyors and a discharge chute, out through the door of box car into hoppers and onto belts which carry it into an elevator.



Can unload 25,000 cu ft of bulk material in less than half an hour



*speed and economy assured
with Fuller-Kinyon*

Deep in the heart of Texas, this Fuller-Kinyon Conveying System is at work handling bulk shipments of pulverized phosphate rock from cars to storage, for a prominent chemical company.

This same portable Fuller-Kinyon Pump, in addition to unloading from box or hopper-bottom cars, on adjacent tracks, and delivering to any one of three storage silos, can be moved on a track to positions underneath these silos. Connection is easily and quickly made to the silo to be emptied and material conveyed to any one of three widely separated process points in the plant.

Advance designing makes this dual use of the Fuller-Kinyon Pump feasible.

Conveying is done at the rate of 50 tons an hour, with the longest conveying distance approximately 690 feet; together with branch lines making a total of about 1070 feet.

A Fuller Rotary Single-stage Compressor furnishes the necessary air to the Fuller-Kinyon Pump for conveying.

If you handle bulk shipments of dry, pulverized materials it will be worth your while to learn about Fuller air conveying systems now. Write today!

FULLER COMPANY, Catasauqua, Penna.

Branch Offices

Chicago • San Francisco • Los Angeles • Seattle • Birmingham



DRY MATERIAL CONVEYING SYSTEMS AND COOLERS . . . COMPRESSORS AND VACUUM PUMPS . . . FEEDERS AND ASSOCIATED EQUIPMENT

When inquiring check CP 1710 on handy form, pgs. 2-3

P-147
1844

MATERIAL HANDLING

Unit is driven by means of caterpillar tracks. Front end of flight conveyor eats into pile, thus feeding conveyor. Hydraulically-controlled side scraper arms reach out to walls of box car and scrape material into the conveyor. Speed of unit is controlled so that combined feeding facilities keep flight conveyor operating at full capacity at all times when sufficient material is in reach of the machine. Side scraper arms operate from operator's seat on top of front unit and can be controlled manually or operated automatically. Operator at rear has control buttons and levers to control rear articulating section. Hydraulic cylinders on castors raise front end of unit off floor when backing out of the box car.

(Cargo Handler is a product of Cargo Handlers Inc., Dept. CP, 23501 Hoover Rd., Van Dyke, Mich. . . . or for more information check CP 1712 on handy form, pages 2 and 3.)

Material handling operations shown in field reports

Bound illustrated booklet shows material handling operations in 12 industries. Emphasis is placed on the role played by different industrial trucks and attachments. Illustrations and text show how time and costs can be reduced in such operations as paint manufacturing, petroleum terminal storing, and bottling works. Booklet is companion volume to Vol. 1 which covers different industries.

Field Reports Vol 2 is issued by the Hyster Co., Dept. CP, P.O. Box 4318, Portland 8, Oregon. When inquiring specify CP 1713 on handy form, pages 2 and 3.

As you read CP —

When You Want More Information

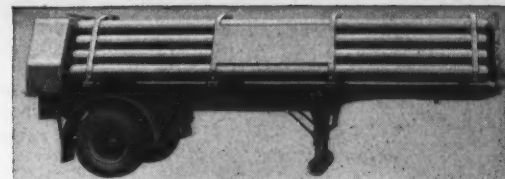
... on some product or service discussed, look for the name of manufacturer or supplier, with address ... at end of editorial article

The information in our "source" paragraph is put there by the editors for your convenience and use when you want further details on ideas or developments discussed in the story. (Did you wonder, "Is this some sort of advertising?") A letter to the given manufacturer ... or a check on the handy Reader Service slip ... will bring you the added information you want. This idea was pioneered in the chemical field by Putman Publishing Company many years ago ... to help busy men like you!

THE EDITORS

NEW

hydrogen transport solves refiners' storage problems



Semi-trailer with 30 or 38 tubes is delivered to point of usage. Capacity of 30 tube unit is 39,000 cu. ft. at 2400 psi; of 38 tube unit, 50,000 cu. ft. at 2400 psi.



Taylor-Wharton can also furnish individual storage cylinders, made to ICC 3A2400 classification and qualifying under API-ASME for 1450 psi.



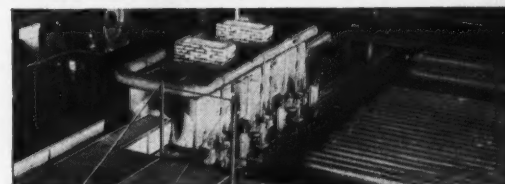
Semi-trailer Mounts 30 or 38 Tubes for Mobile, Compact, High Pressure Hydrogen Storage

In response to hydrogen storage problems faced by new platforming process plants, Taylor-Wharton offers two kinds of high pressure cylinder installations, the permanent and the transport, now successfully used in the chemical industry.

Investigation of high pressure equipment will reveal the economy of this method of storage. (Low pressure storage requires an expensive compressor.) The tubes readily provide a flexible supply of hydrogen to get you "on stream" quickly. High pressure storage saves space, packing up to 50,000 cubic feet of hydrogen at 2400 psi in the transport.

Write now for Bulletin 200 which will show you the economy of Taylor-Wharton cylinders for your hydrogen plant.

Taylor-Wharton high pressure transports efficiently store and deliver for Allied Chemical & Dye Corporation. High storage capacity and mobility will save handling dollars and floor storage space for you too.



Modern heat treating facilities for tubes at Taylor-Wharton Iron and Steel Company.



TAYLOR-WHARTON IRON & STEEL COMPANY

CINCINNATI 12, OHIO

Also Manufacturers of: Manganese Steel Castings, Alloy and Carbon Steel Castings, Special Trackwork, Gas Cylinders

When inquiring check CP 1714 on handy form, pgs. 2-3

DARNELL CASTERS & WHEELS

with all types of rubber treads to meet every operating condition in chemical plants



DARNELLOPRENE

...is a soft, resilient rubber tread—a Neoprene-rubber compound—that has superior quality in resistance to oils, waxes, most chemicals and oxidation. It is an exclusive standard for all Darnell Soft Rubber Wheels.

DARNELLOCORD

...has a natural rubber content scientifically compounded for long life and satisfactory service. Darnellocord wheels are of medium hardness and roll with ease under heavy loads.

DARNELLITE

...a tough tread made of hard synthetic compound. This type tread is ideal where extra heavy loads are to be carried over smooth hard floors. Darnellite treads provide easy rolling and swiveling under all conditions.

DARNELL CASTERS & WHEELS

Always

SAFETY and **ROCK**

Free DARNELL MANUAL

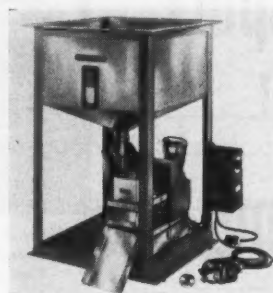
DARNELL CORPORATION, LTD.
DOWNEY (LOS ANGELES COUNTY), CALIFORNIA
80 WALKER STREET, NEW YORK 13, NEW YORK
36 NORTH CLINTON STREET, CHICAGO 6, ILLINOIS

When inquiring check CP 1715 on handy form, pgs. 2-3

MATERIAL HANDLING

Weigh feeder saves plastic, gives higher injection cycle and reduces rejects...

starve-feeds molding machine and prevents material from flowing out of mold cavity



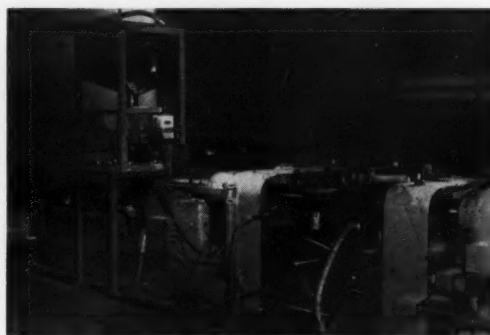
Net weighing machine

Uses: For installation on top of injection molding machines to measure correct amount of plastic to be fed into mold cavities.

Features: Machine can be quickly changed to handle different materials, or to weigh different amounts.

Scale is even balance design employing a weigh platter and notched beam with sliding poise.

Description: Plastic material is fed from three cu ft net weighing machine hopper to feeder trough. Vibratory feeder trough delivers exact



Weigh feeder on injection molding machine prevents forming of material cushion in front of plunger at end of forward stroke

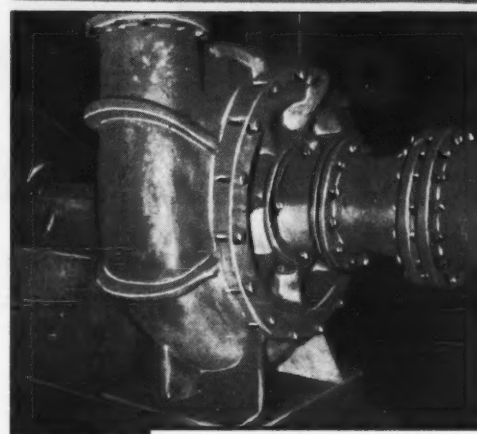
amount of material into automatic weigh bucket. Weigh feeder is synchronized with molding machine ram cycle. Weigh bucket fills to exact weight, holds material until ram trips switch which dumps plastic charge into injection feed chamber.

A high degree of accuracy is possible with machine. For example, a 20 oz charge of granular polystyrene can be fed within 1/2 gram accuracy.

Scale has bucket capacity of 75 cu in. Feeder is Syntron vibratory type and has flat pan trough 3" wide x 10" long. Hopper is of stainless steel and has 3 1/4 cu ft capacity. Controls are electrical and consist of mercury magnetic switch for feed cutoff and rheostat for rate of feed. It operates in 110-220 v, 60 cy single phase, weighs 115 lb.

(Mod 213-F-00-IM Feeder is produced by The Exact Weight Scale Co., Dept. CP, 944 West Fifth Ave., Columbus 8, Ohio... or for more information reader may simply check CP 1716 on the convenient Reader Service slip located between pages 2 and 3.)

Continuous Low-Wear Non-Clog Solids Pumping... At Lower Cost



Morris
low-speed
wide-clearance
SOLIDS PUMP

Actual working installation of a low-speed, wide-clearance Morris Solids Pump which handles fine solids at a rate of 6,000 gpm at 52' total head. Pump speed only 370 rpm, 14" suction opening, 12" discharge.

Where total heads do not exceed about 120 feet, low-speed, wide-clearance Morris Type-M Solids Pumps will handle solids ranging from fine abrasives up to pieces 11" in diameter. The low-speed reduces the abrasive action of the smaller particles, the large clearance allows larger solids and "tramp" pieces to pass without trouble.

Longer Wear, Easier Maintenance

Designed so that the most important wearing parts receive the least wear, initial high mechanical and hydraulic efficiencies are maintained throughout the longer service period of the pump. Double-thick wearing parts are sub-divided and protected so that the greatest erosion is taken by easily replaced segments. That means speedy, easy renewal, less down-time and lower maintenance cost.

Free Consultation

Morris engineers are always available to discuss and study your pumping problems with you. Describe your needs in a letter—or call your nearest Morris office. Our recommendations are free—entail no obligation. Write for Bulletin 175 which describes the Type M Solids Pump in detail.

MORRIS MACHINE WORKS

Baldwinsville, N. Y.

Sales Offices in Principal Cities

MORRIS Centrifugal Pumps

When inquiring check CP 1717 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Lift, carry and up-end drums with fork lift truck attachment . . .

tilts containers 150° forward to empty contents into vats, tanks, or hoppers

Uses: In operations where bulk chemicals in barrels or drums must be handled frequently.

Features: Attachment which fits on manufacturer's line of fork lift trucks enables driver to load, lift, transport, and up-end barrels or drums.

Description: Operator controls clamping action from driver's seat. Fork spread is adjustable to



Lift truck uses attachment to clamp and empty drum

accommodate various drum and barrel sizes. Hydraulically-controlled pivot tilts container 150° forward.

(Up-ender attachment is a product of Lewis-Shepard, Dept. CP, 193 Walnut St., Watertown, Mass. . . or for more information check CP 1718 on Reader Service slip which is located between pages 2 and 3.)

Storage and transporting of liquefied gases shown

Illustrated 16-page catalog describes line of equipment for storage, transport and transfer of liquefied gases. Evaporation charts, capacity charts and cutaway views of equipment are included. Semi-trailer-mounted mobile transport for liquid oxygen and nitrogen is shown in detail. Hydrogen liquefaction and purification Dewars, automatic, semi-automatic and manual discharge devices and filling funnels are outlined. Chart of comparative low temperatures for Centigrade, Fahrenheit and Kelvin is included as well as chart on properties of gases.

Low Temperature Apparatus Catalog is issued by Hofman Laboratories, Inc., Dept. CP, 219-221 Emmet St., Newark, N. J. When inquiring reader may simply specify CP 1719 on the convenient Reader Service slip which is located between pages 2 and 3.

HANDLING "TOUGH" MATERIALS?—



A 60' Carrier Natural-Frequency screening conveyor for clay products, with 24" pan made of 1/4" steel plate.
Capacity: 100 tons of 100-pound material per hour. 5 H.P. drive. Middle section of screen removed to show supporting bridge.

Close-up of drive — note patented drive linkage which always places weight of vibrating pan and conveyed materials on the spring supports, and never allows these loads to be imposed on the eccentric shaft and bearings.

anything that's hot, sharp, powdered, oily, abrasive, sticky, granulated or stringy?

Check These Advantages!

- **LESS POWER REQUIRED**
(1000 foot-tons per hour per H.P.)
- **LESS MAINTENANCE & DOWN-TIME**
(Less power + good design = good service)
- **GREATER CAPACITY**
(From a dribble up to 200 tons per hour)
- **HIGH CONVEYING SPEED**
(Up to 100 feet per minute, on flat hauls)
- **NO DAMPENING UNDER LOAD**
(Designed with extra power for specified load, with positive stroke)
- **SELF CLEANING**
(Continuous smooth trough—no pockets)
- **SCREENS, DEWATERS, SEPARATES, BLENDS, DRIES, COOLS**
(Combines processing with conveying)
- **WIDTHS FROM 6" TO 48"; LENGTHS FROM 5' ON UP**
(With pans 16 gauge to 1/2" plate or heavier, open or enclosed)
- **BALANCED, VIBRATION-FREE UNITS AVAILABLE**
(For use on ceilings or light floor construction)

**CARRIER
NATURAL-FREQUENCY
CONVEYORS**

Carrier Natural-Frequency Conveyors work on a unique, patented vibrating principle which permits them to handle many materials that are too "tough" for most screw, belt, apron, vibrating and other conventional types of conveyors. These spectacular new conveyors also substitute the natural resonance action of coil springs for brute force. Result—a tremendous reduction in power . . . far less wear-and-tear . . . and an absolute minimum of maintenance and down-time!

Carrier Natural-Frequency Conveyors—including vertical vibrating spiral types—are now racking up amazing conveying records for scores of America's biggest, most successful industrials. Let us prove to you that they will move *your* product more quickly, efficiently and economically. Mail the coupon—no obligation of course!

Carrier Conveyor Corporation
2102 Frankfort Avenue, Louisville 6, Kentucky

Gentlemen:

Without obligation, please send me Carrier Natural-Frequency Conveyor Bulletin No. 111.

Firm _____
Street _____
City _____ State _____
Att. Mr. _____ Dept. _____

When inquiring check CP 1720 on handy form, pgs. 2-3



Keep Merchandise Moving with Roller or Belt Conveyor

• With an experience record of more than 45 years—Standard is known as headquarters for any "package" conveyor need—can help you to handle packages, parts, units—faster—at lower cost with gravity or power roller, belt, slat, chain, wheel or pushbar conveyors. For complete information write Dept. CP-84



Load-Unload • Stack • Elevate with a HANDIPILER

• Handles sacks, boxes, cases, cartons, bundles—conveys up or down. Built in 14 and 24 inch widths; boom is designed to pile cartons up to 17 ft.—sacks to 12 ft.—projects into cars, trucks, trailers. Handles commodities up to 135 lbs. Write Dept. CP-84 for Bulletin 63-D,

Build Your Own System with Standard HANDIDRIVE Pre-Built Units ...



STANDARD CONVEYOR COMPANY
General Offices: North St. Paul 9, Minnesota
Sales and Service in Principal Cities

• Handidrive belt, live roller and gravity roller conveyors consist of drive and take up units, and roller assemblies, intermediate framework, supports and hanger, to make complete conveyors—or to convert present gravity conveyors to power conveyors. Write for Bulletin 63-D, address Dept. CP-84

Send for Bulletin 63-D,
describing the above
and other Standard Con-
veyor equipment. Ad-
dress Dept. CP-84



Standard

ROLLER • BELT • SLAT • CHAIN • WHEEL
PUSH-BAR • SECTIONAL

PORTABLE CONVEYOR UNITS:
HANDIBELT • HANDIPILER

INCLINEBELT • LEVEL BELT • EXTENDOVEROYER
UTILITY BELT-VEYOR • HANDI-DRIVE

CONVEYORS VERTICAL LIFTS • PNEUMATIC TUBE SYSTEMS

When inquiring check CP 1721 on handy form, pgs. 2-3

MATERIAL HANDLING

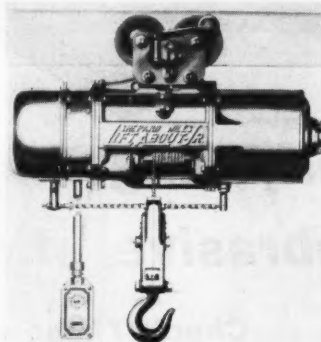
Light service lifting tasks accomplished by using wire rope hoist ...

comes with either DC or AC motor

Uses: For hoisting loads of 1/4 to 1 ton.

Features: Lift can be supplied with collectors for regular conductor systems or with tag line. It is furnished either parallel or cross mounted, with bolt, hook or trolley suspension.

Description: Light service, quick action wire rope hoist comes with either AC or DC motor. Speeds range from 12 to 25 fpm on DC types and from



For 1/4 to 1 ton loads

20 to 37 fpm on AC. Maximum lift is 16 ft on hook suspension units, 20 ft on all other frame sizes. It may be equipped for either push button or rope operation.

(Lift About-Jr is produced by Shepard Niles Crane & Hoist Corp., Dept. CP, 410 Schuyler Ave., Montour Falls, N. Y. Check CP 1722 on handy form, pages 2 and 3.)

No rust contamination when drying trays are plastic ...

glass-polyester trays have 15 ft-lb impact resistance

Uses: For containing chemicals that must undergo dehydrating or freezing.

Features: Combination of polyester resins and Fiberglass pro-

ONE QUICK STROKE!

Your load's ready to ROLL ...

with these two new Weld-Bilt time savers

Amazingly easy to handle, lighter, smooth-rolling, new low-priced "Pal-Boy" is a great time-saver on single or double pallet loads up to 2500 lbs! ONE swift handle-stroke lifts your load to rolling position. New ball bearing booster rollers on each fork simplifies positioning under pallets. Has many new safety and load-saving features.

NEW "PAL-BOY"

SINGLE STROKE MECHANICAL LIFT PALLET TRUCK



NEW "LO-BOY"

MECHANICAL SINGLE STROKE LIFT TRUCK



Built unusually low, designed for versatility, this easy-moving "LO-BOY" handles single-laced pallets as well as standard skids and loads, with "One-Stroke" lifting speed. Light weight, compact, strong, with Automatic Free Handle Release, Handle Safety Spring, Foot Pedal "Jar-Free" hydraulic lowering, and other features. For loads up to 2000 lbs.

WIRE or write for new bulletin and low prices on these new Weld-Bilt SINGLE STROKE time-savers.

WEST BEND EQUIPMENT CORPORATION

Materials Handling Engineers

322 Water Street, West Bend, Wisconsin.

When inquiring check CP 1723 on handy form, pgs. 2-3

STAINLESS STEEL CONVEYOR SCREWS

4", 6", 9", 12" DIA.



for immediate delivery

STOCKED IN TWO STYLES

- Continuous Welded and Polished
- Industrial Finish

M-H STANDARD CO.

516 Communipaw Ave., Jersey City 4, N. J.

Other	VERSABAR Metal Framing
M.H.	ARMORBELT Metal Belt Conveyor
Products	MONOFLO Rotating Cable Conveyor

When inquiring check CP 1724 on handy form, pgs. 2-3

CHEMICAL PROCESSING

MATERIAL HANDLING

duces trays with flexural strength of 30,000 psi and impact resistance of more than 15 ft-lb.

Description: Plastic and Fiberglass trays are stable over temperature range from -60 to 300°F. No metal parts are used.

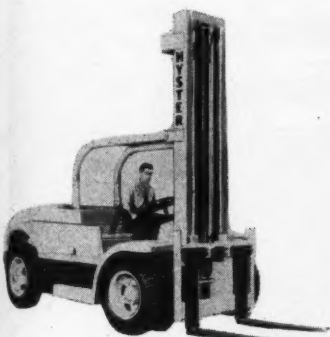
(Plastic-Fiberglass trays are a product of Bakelite Co., Div. of Union Carbide & Carbon Corp., Dept. CP, 260 Madison Ave., New York 16, N.Y. . . . or check CP 1725, pages 2 and 3.)

Handle loads to 7½ tons with ease

Uses: For lifting and general material handling requiring capacities to 15,000 lb.

Features: Short overall length and narrow width allows truck to be used in confined areas. Ample underclearance allows travel over rough surfaces, inclines.

Description: Mounted on 8.25 x 20 pneumatic tires, lift truck is powered by heavy-duty, water-cooled industrial engine. Other



Ample underclearance allows travel over rough terrain

models are available in capacities of 16,000 lb and 18,000 lb at 24" load centers.

(Lift trucks are a product of Hyster Co., Dept. CP, 2902 N.E. Clackamas St., Portland 8, Ore. Check CP 1726, pages 2 and 3.)

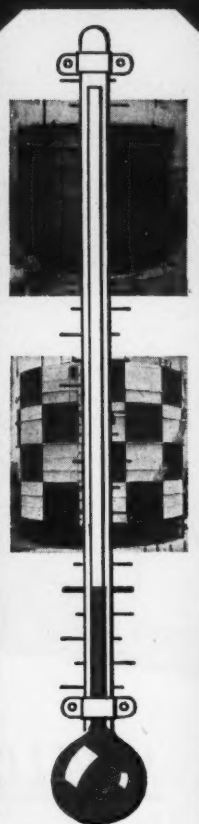
For more information on product at right, specify CP 1727 . . . see information request blank between pages 2 - 3.

from the ARCTIC to the TROPICS

more than

130

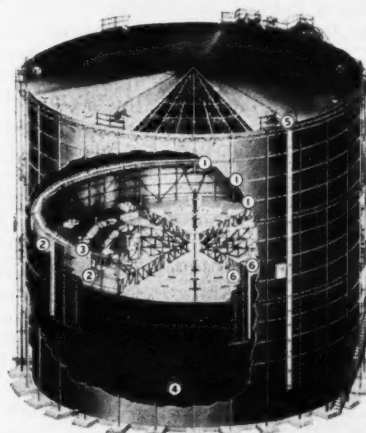
WIGGINS
GASHOLDERS
have eliminated
operating costs
for users of
chemical process
and industrial
gases



This 100% dry seal gasholder (no water, no tar, no grease) has proved itself under every condition of climate and temperature. Because of the seal and the simple operating mechanism, operating costs have been entirely eliminated. Comparison of maintenance expense by owners of Wiggins gasholders also shows remarkable savings. Companies who have converted old-type gasholders to the Wiggins advantages have been able to enjoy similar savings. Write for information.

PISTON RISES NEARLY TO TOP—MINIMUM OF WASTE SPACE
CAN BE BUILT ANY SIZE • NO CONTAMINATION OF GAS

1. Space above piston completely ventilated
2. Wide clearances simplify operation.
3. Gas-tight frictionless seal not affected by weather.
4. Piston rests on bottom when empty—less than ¼ of 1% dead space for purging.
5. Leveling device—dependent of side wall—keeps piston level.
6. Fenders prevent all tension in seal.



General American Transportation Corporation
135 SOUTH LA SALLE STREET • CHICAGO 90, ILLINOIS

Offices in Principal Cities

Export Dept.: 380 Madison Avenue, New York 17, N. Y.
Plants: Birmingham Ala. • East Chicago, Ind. • Sharon, Pa.
In Canada: Toronto Iron Works, Ltd., Toronto, Ontario

by
**GENERAL
AMERICAN**





Rugged NEW **SHOVELOADER** mechanizes bulk handling for only \$3395⁰⁰*

For LESS than \$10.00 a day for one year . . . much less than you pay a laborer with a hand shovel . . . you can own a Baker-Lull 12 cubic foot SHOVELOADER. And you get a lot more for the money!

Check all of these features and see why this SHOVELOADER compares with others costing \$350 to \$400 more. The lift height is a tall seven feet with lifting capacity a husky 1500 pounds . . . 500 pounds more than most competitive units. The loader arms are located out in front of the operator—not around him—to keep him safe from injury and give him clear-view visibility at all times. The bucket can be cradled low too, giving

him unobstructed forward visibility and making it unnecessary to drive backward as with other units. Maximum travel speed is 14 MPH. Plenty of bucket tilt back at ground level makes it easy to get a full bucket every time from stockpiles . . . letting you reduce handling costs by moving more bulk in a shorter time.

Attachments let you do more types of work too. Lift forks let you handle palletized loads, the crane hook gives you a portable hoist, and special buckets are available for handling dense materials. Exhaust-destroying catalytic equipment is also available for indoor use where necessary.

Baker-Lull SHOVELOADERS are available in sizes ranging from 12 cubic feet to 1½ cubic yards four wheel drive. Should you desire information on other sizes please specify when writing. The BAKER-LULL Corporation, 315 West 90th Street, Minneapolis 20, Minn.

*F.O.B. Minneapolis

THE BAKER-LULL CORPORATION,
315 West 90th Street • Minneapolis 20, Minn.

Please send full information on the Baker-Lull Model 20, 12 cu. ft. SHOVELOADER which sells for only \$3395.00.

NAME.....
COMPANY.....
ADDRESS.....
CITY.....STATE.....



SHOVELOADER

When inquiring check CP 1728 on handy form, pgs. 2-3

MATERIAL HANDLING

Tells features of fork truck for fast tiering

A 2000-lb capacity fork truck, designed for fast tiering and available in two models, is described in manufacturer's 4-page folder.

In two models, the truck, known as the F-26T, has one model with a 68" width specially adapted for freight car and truck loading. Other model has an 83" width, is designed for high tiering where headroom is unrestricted. Both models are battery powered.

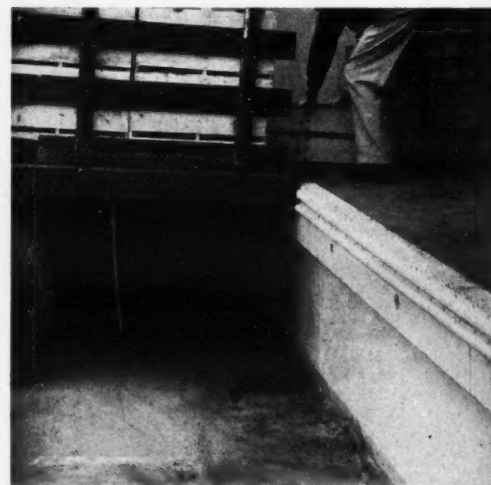
Folders describing the F-26T are available from the Elwell-Parker Electric Co., Dept. CP, 4205 St. Clair Ave., Cleveland 3, Ohio. When inquiring specify CP 1729 on handy form, pages 2 and 3.

Neoprene bumper strips protect truck loading docks . . .

also protects paint damage on trucks and prevents rust-inducing dents

Uses: Eliminates scraping, gaging, and cracking of wood facing boards on truck loading platforms.

Features: Bumper is made of neoprene synthetic rubber. It is highly resistant to abrasion and tear, as well as to effects of sunlight, weather, oils, greases and acids.



Neoprene strips are nailed to loading platform with ordinary roofing nails

Description: Dock guard resembles a half-round molding on a wide, flat base. The 14-ft sections are hollow, with longitudinal inner webs that provide the necessary rigidity and "bounce". Diameter of curved section is 1¾" and base is 2¾" wide. Wall thickness is about ¼" and each section is extruded in continuous unit with no seams or joints between bumper and base.

The case of the immovable powder...



This case came to a head in a New York cosmetic plant. Keeping dry powder moving through the bins and drums without costly jam-ups was a real problem.



We're happy to say a CLEVELAND vibrator on each bin and drum was the ideal solution. In no time at all production delays became a thing of the past.

Tell us your materials handling problem, or ask for our detailed literature.

AIR and ELECTRIC

Bin Stuck Lately?



2706 Clinton Avenue • Cleveland 13, Ohio

When inquiring check CP 1730 on handy form, pgs. 2-3

MATERIAL HANDLING

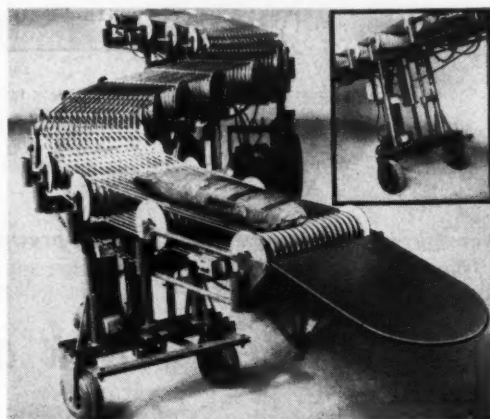
Installation is simple. Bumper is applied with ordinary roofing nails spaced three or four inches apart along upper and lower flanges.

(Dock Bumper is produced from du Pont Neoprene by the Everguard Co., Post Office Box 143, Dept. CP, Newport Beach, Calif. . . . or for more information check CP 1731 on handy form, pages 2 and 3.)

Conveyor swings from side to side and changes discharge level while in operation . . .

power-operated headstand gives pushbutton control of discharge height

Flexible box car loader has power operated headstand allowing discharge of bags at any height from 3½ to 6½ ft. Chief feature of loader is its complete flexibility from end to end while in



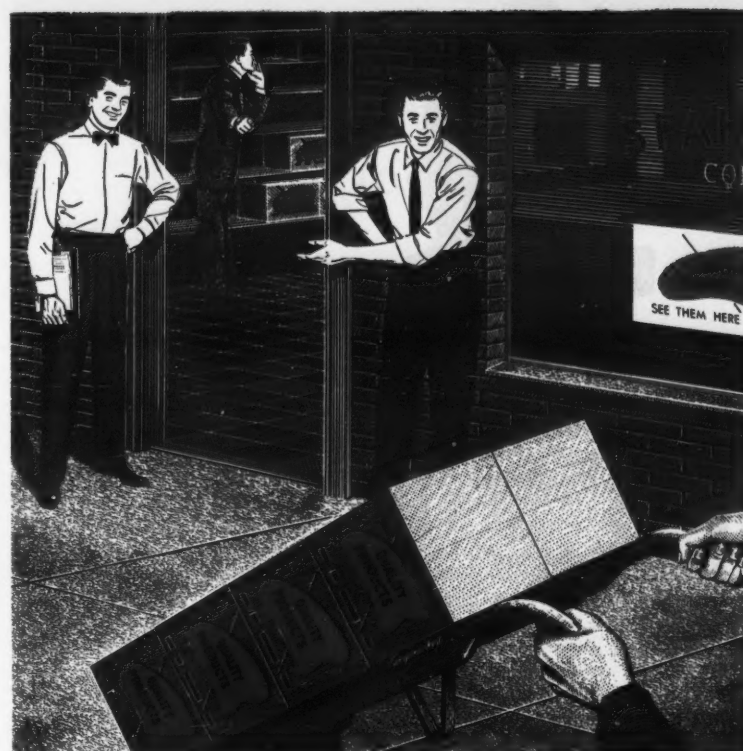
Conveyor is completely flexible while in operation. Inset shows powered headstand which permits adjustment of discharge level

operation. It is self-propelled, self-retracting and reversible. Reversible electric drive provides full control of conveying speed. Separate motor operating through an automotive differential makes loader self-propelled.

Overall length of model shown is 30 ft, including 30-inch discharge plate. Cast aluminum rollers are 24 inches wide. Radius as small as 8 ft to either side provides access to all parts of any size box car.

Coil spring belts form conveyor surface and keep bags flowing without danger of snagging or ripping. Open construction keeps cars clean since material on bags falls through and remains in pack house.

(Flexible loader is a product of the Power-Curve Conveyor Co., Dept. CP, 2185 S. Jason St., Denver 19, Colorado . . . or for more information check CP 1732 on handy form, pages 2 and 3.)



Attractive Gaylord Boxes Belong in Your Merchandising Plans

All successful sales promotions have one big feature in common: *No selling opportunity is ever overlooked!*

Consider bright-printed Gaylord Boxes as a *selling opportunity* . . . as a functional part of your merchandising plans. Carrying your brand name and sales message in effective billboard style, these boxes sell *well* all along your channels of distribution.

Learn how you can put Gaylord quality salesmanship and protection to work. Call your nearby Gaylord sales office.

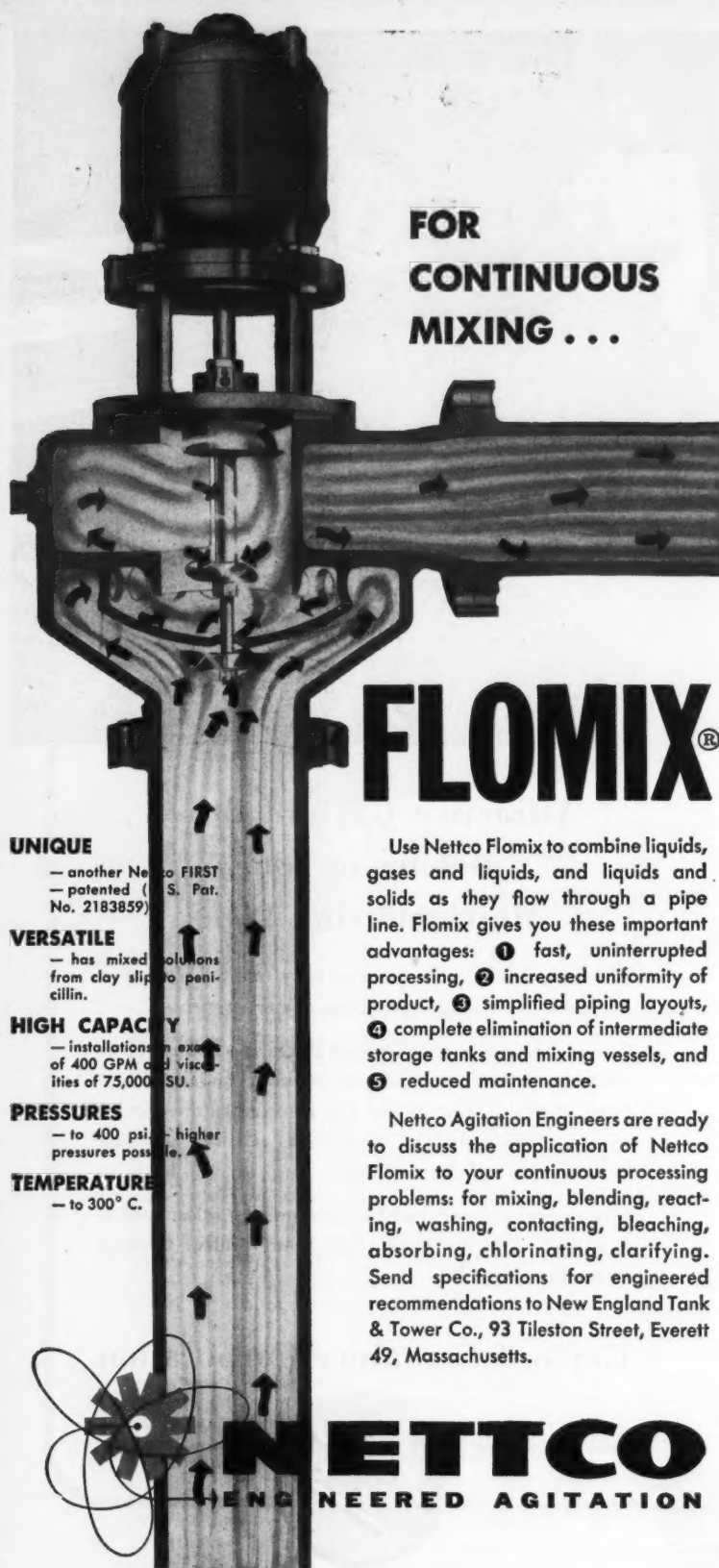
Gaylord Container Corporation

GENERAL OFFICES
SAINT LOUIS, MO.

SALES OFFICES
COAST-TO-COAST



CORRUGATED AND SOLID FIBRE BOXES • FOLDING CARTONS • KRAFT BAGS AND SACKS • KRAFT PAPER AND SPECIALTIES



FOR
CONTINUOUS
MIXING...

FLOMIX®

UNIQUE

— another New England FIRST
— patented (U.S. Pat.
No. 2183859)

VERSATILE

— has mixed solutions
from clay slip to peni-
cillin.

HIGH CAPACITY

— installations in excess
of 400 GPM and viscosi-
ties of 75,000 cP.

PRESSURES

— to 400 psi — higher
pressures possible.

TEMPERATURE

— to 300° C.

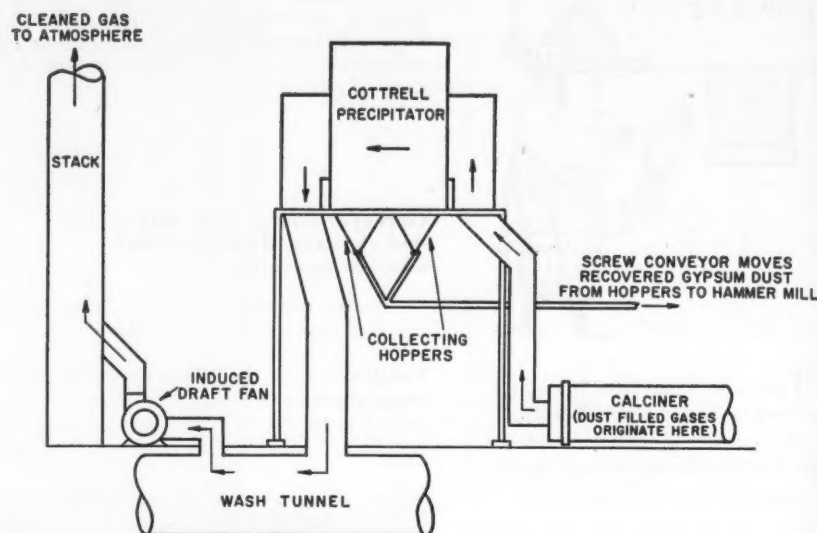
Use Nettco Flomix to combine liquids, gases and liquids, and liquids and solids as they flow through a pipe line. Flomix gives you these important advantages: ① fast, uninterrupted processing, ② increased uniformity of product, ③ simplified piping layouts, ④ complete elimination of intermediate storage tanks and mixing vessels, and ⑤ reduced maintenance.

Nettco Agitation Engineers are ready to discuss the application of Nettco Flomix to your continuous processing problems: for mixing, blending, reacting, washing, contacting, bleaching, absorbing, chlorinating, clarifying. Send specifications for engineered recommendations to New England Tank & Tower Co., 93 Tileston Street, Everett 49, Massachusetts.

NETTCO
ENGINEERED AGITATION

When inquiring check CP 1733 on handy form, pgs. 2-3

**processing
equipment**



Flowsheet illustrates gypsum dust recovery system at US Gypsum's Mystic Wharf plant

Continuous rapping system on Cottrell precipitator prevents
"rapping puffs" and...

eliminates stack dust losses

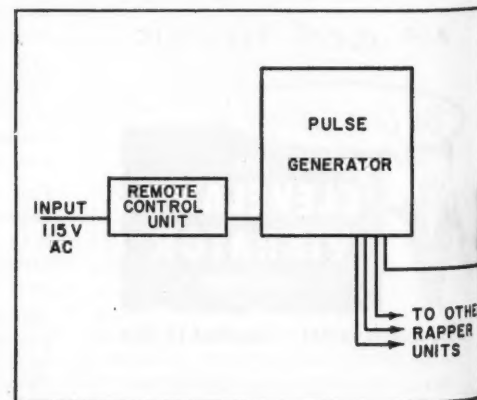
Accumulations on collecting elec-
trodes held to critical level
for optimum conditions

Standard practice for unloading dust accumulations from collector electrodes of electrical precipitators has been to intermittently rap the electrodes with pneumatic or mechanical devices. Hand-rapping tools are also used, but these require shutting down the unit. Dust aggregates decrease efficiency of precipitators by interfering with electrical field which ionizes suspended particles and attracts them to the grounded collector electrodes.

Main objection to intermittent rapping is that when heavy dust accumulations hit hoppers at bottom of unit, they cause "rapping puffs", which result in dust re-

entrainment and stack losses.

US Gypsum's Mystic Wharf plant, Boston, Mass., has overcome this by installing a Cottrell electrostatic precipitator having an automatic continuous rapping system



which cleans the electrodes every minute or less. Gypsum dust, contained in gases given off by plant's rotary calciner, ranges in concentration from 20 to 45 grains per scf of gas. The precipitator will clean 40,000 cfm of gases at approximately 300°F with a rated efficiency of 99%.

In the system the precipitator's collecting plates are grouped into separate banks. A horizontal rapping bar is welded along the edges of these banks. The bar protrudes through the precipitator wall via a stuffing box. Individual rapping units deliver their impacts on this bar to bank-rap electrodes in each section.

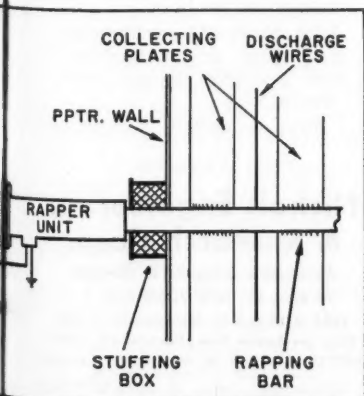
Each bank is automatically rapped in sequence with a fast rapping cycle, or at a selected frequency rate. Dust aggregates become dislodged in small isolated patches, with the amount being small enough to be accepted and retained by hoppers without causing puffs.

Impacts are supplied by solenoid-actuated plungers—magnetic-impulse rappers. A central pulse generator (115v AC) can supply energizing current for up to 24 rapping units. Power expenditure for these would be about 300 watts.

Frequency and intensity of the rapping impacts are easily controlled by regulating pulse discharge to rappers. Once controls are set, entire system operates automatically with minimum supervision. Separate remote-control unit permits monitoring from any convenient plant location.

(Automatic rapping system is development of Research Corporation, Dept. CP, 405 Lexington Avenue, New York 17, New York . . . or for more information check CP 1734 on handy form, pages 2 and 3.)

Continuous rapping system for Cottrell electrostatic precipitators cleans electrodes every minute or less, operates on magnetic and electrical principles



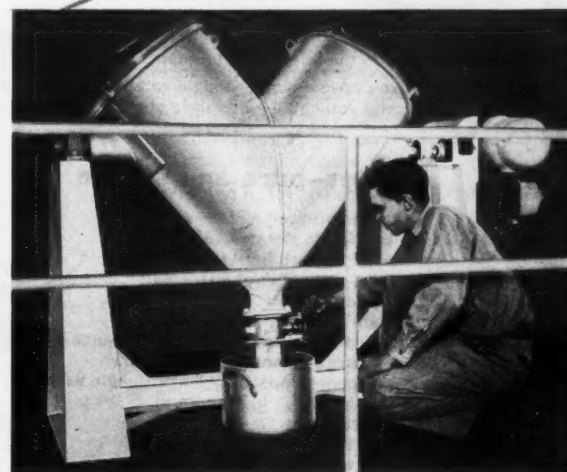
Vitamins
B₁, B₂, Niacin and Iron



For good taste

For good health

For good blending



Delicious Cream of Rice is a family favorite.

Enriched with essential vitamins, it not only tastes good, but is good for you.

Thorough blending of vitamins is, of course, imperative. A **p-k** 5 cu. ft. stainless steel blender*, equipped with intensifier bar*, effectively blends four basic vitamins—niacin, thiamine, riboflavin and iron compound. This is another example where the food industry has selected the **p-k** twin shell blender to precision blend these important vitamins.

Loading is simplified by quick opening, dust-tight covers. Discharge is rapid, too,

* patented

with the pre-blended vitamins emptied directly into containers for subsequent blending with the rice. Its smooth baffle-free interior facilitates clinical cleaning.

The application of **p-k** twin shell dry blenders to your particular processes will assure efficient blending at low cost. Why not pre-test your materials in **p-k**'s special blending laboratory. Send a sample of your materials for a thorough blending analysis, or write for catalog 12, no obligation.



the **Patterson-Kelley Co., Inc.**

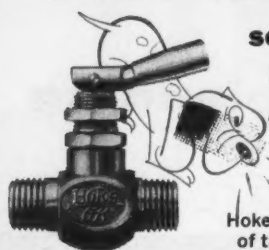
780 Lackawanna Avenue, East Stroudsburg, Penn.

101 Park Avenue, New York 17 • Railway Exchange Building, Chicago 4 • 1700 Walnut Street, Philadelphia 3 • 96-A Huntington Avenue, Boston 16 • and other principal cities.

When inquiring check CP 1735 on handy form, pgs. 2-3

HOKE Flow Sheet

Hoke reports on fluid control



scientific nose

Motorists in vehicular tunnels throughout the nation may owe their lives—or at least their comfort—to Carbon Monoxide Detection Equipment manufactured by Teller & Cooper, Inc., of Brooklyn, N. Y. Says Stanley A. Kroll, vice-president, "We have always specified Hoke Toggle Valves for our equipment because of the close tolerances to which Hoke products are made. Once a Hoke Valve is placed in the line, no maintenance is required."

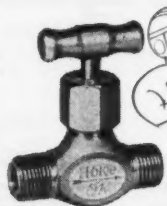
If you have a similar toggle valve application, we'll be glad to send you catalog and data sheets, pronto.

water—pure and simple

Pure, demineralized water—whenever you want it. That's the purpose of the Barnstead Pressure Bantam Water Demineralizer, a product of Barnstead Still and Sterilizer Co., of Boston, Mass. An important part of this equipment is a Hoke Needle Valve, chosen because of "its compact size and its precise flow regulation characteristics." Hoke Needle Valves come in sizes $\frac{1}{8}$ " to $\frac{1}{2}$ " in aluminum, brass and stainless steel.



triple-threat valve



"We tested many valves for our Infra-Red Gas Analyzer before selecting Hoke," says Max D. Liston, of Liston-Becker Instrument Co.

"We had three requirements in mind. First, the valve must withstand corrosive

gases and environments; second, it must not leak in the closed position, holding a charge for as long as a year; third, it must fit into a very limited space. So far, Hoke Valves have met all requirements."

Do you have a tough job for a small valve? Why not let us offer our suggestions?

HOKE

HOKE
INCORPORATED
Fluid Control Specialists

100 S. DEAN STREET, ENGLEWOOD, N. J.

PROCESSING

High-temperature stack gases handled by scrubber at rates to 60,000 cfm . . .

housing can be low-cost cinder block, concrete, or steel, with special lining if needed

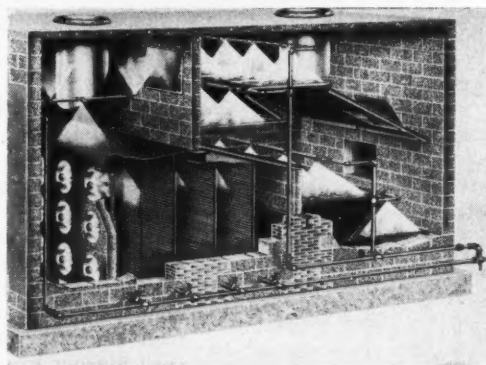
Uses: Removes dust from exhaust gases of cyclones, rotary dryers, kilns, roasters, mixers, pulverizers, sintering plants.

Features: Housings for system can be built of concrete or cinder block for permanent installation, or of fabricated steel for portable unit. Requires no complicated piping for connecting to existing ducts. Neither cloth bags nor filters are used. Capable of removing dust particles of sub-micron sizes.

Description: Type H Liquid Precipitator Multiple-Action Scrubber incorporates six different principles of dust precipitation and is somewhat similar in operation to company's earlier Type V unit (see *CHEMICAL PROCESSING*, May 1953, pgs. 138-139) made of welded steel plate.

Models available can handle high-temperature gases in capacities ranging from 8000 to 60,000 cfm. Sizes range from 19 x 9 x 5 $\frac{1}{3}$ ft wide to 28 x 17 x 13 $\frac{1}{3}$ ft wide. Approximately 2 $\frac{1}{2}$ gpm of water at 40 to 50 psi are required per 1000 cfm. Average draft loss is 2 inches water. Removed dust is reduced to watery sludge which can be discharged into tank or pond for removal of solids. Recirculating system can be used where water supply presents problem.

In operation, dust-laden gas enters scrubber at about 425°F, is cooled, and large particles separated in first expansion chamber. Multiple scrubber throats divide gas into many smaller volumes for better scrubbing action. Velocity of gas increases so that entrained



Gas scrubber has average draft loss of 2" water. Dirty gas enters at top left in picture, leaves at top right

solids hit impinger plates hard as they leave throats. High-velocity jet of water also hits plates, breaking up into small droplets which provide efficient scrubbing action. Gases expand into second expansion chamber, where bulk of solids is discharged in slurry form into trough in floor of unit.

Gases pass through three impingement panels and then move into third expansion chamber. Velocity

to make a

long

story short . . .

Nerco-Niro* Spray Dryers will do the job . . . better

Gentle drying, free-flowing product, maximum solids recovery, particle uniformity and economical operation all add up to a better spray drying job. Nerco-Niro engineers are prepared to engineer and install a complete spray drying plant with a capacity of a few pounds or many tons per hour.

Pilot plant and commercial size spray drying facilities are available in our new laboratories.

Write for Bulletin No. 226.

*Reg. U. S. Pat. Off.

Nichols Engineering & Research Corp.

Nerco-Niro Spray Dryer Division

70 PINE ST., NEW YORK 5, N. Y.

1637 N. Illinois St., Indianapolis 2, Ind.

40 S. Los Robles Ave., Pasadena 1, Calif.

1477 Sherbrooke St. W., Montreal 25, Canada

When inquiring check CP 1737
on handy form, pgs. 2-3

CHEMICAL PROCESSING

When inquiring check CP 1736 on handy form, pgs. 2-3

PROCESSING

is slowed to provide maximum entrapment of dust particles. Reversing direction of gases upward into fourth chamber causes part of wetted solids to be removed by inertial separation.

From here gases continue upward to two sets of precipitator elements where low-micron particle sizes and entrained mist are eliminated. This is accomplished by use of solution called "Compound M", which is delivered by proportioning device to precipitator elements. Solution (diluted 1:750 with water) wets solid particles in gases and dusts which ordinarily repel water. It also speeds water clarification in sludge pond or settling tank by making solids sink to bottom more rapidly.

After passing through precipitator elements, cleaned gases are discharged into atmosphere.

(Scrubbers are product of Johnson-March Corporation, Dept. CP, 1724 Chestnut Street, Philadelphia, Pa. . . . or for more information check CP 1738 on handy form, pages 2 and 3.)

Resistance to acids, bases shown by Dacron filter cloth . . .

withstands mechanical attack in excess of normal filtration requirements

Uses: As filter cloth for alcohols, bleaching agents, ketones, hydrocarbons, halogenated hydrocarbons, dry-cleaning solvents, soaps and detergents, weak acids and alkalis.

Features: Has good resistance to weak acids at room and boiling temperatures, and to moderately strong acids at room temperature. Fiber also has good resistance to weak alkaline solutions and moderate resistance to strong alkalis at room temperature, but is degraded by strong alkalis at elevated temperatures.

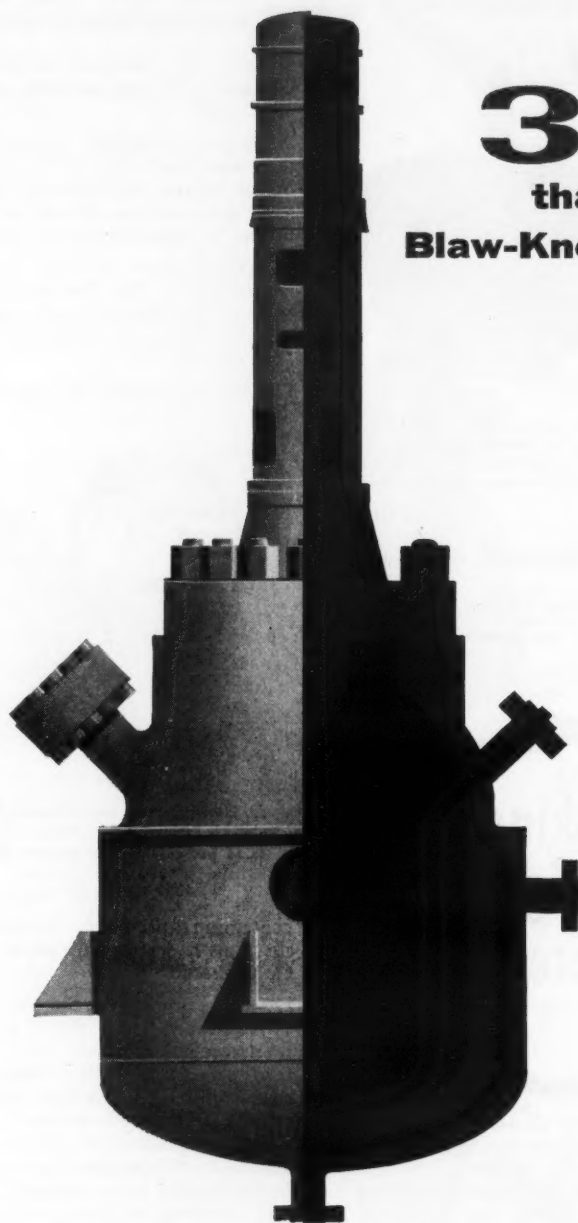
Said to outrank all other fibers, except nylon, in abrasion resistance. Withstands mechanical attack far in excess of normal filtration requirements.

Description: Cloth is woven from Dacron fibers (made by E. I. Du Pont de Nemours and Company), a polyester derived from terephthalic acid and ethylene glycol. Material has melting point of approximately 480°F, moisture absorption of 0.6 to 0.7%, and is resistant to molds, mildew, and fungi. Cloth is supplied in preshrunk form.

(Dacron filter cloth is product of The National Filter Media Corporation, Dept. CP, 1717 Dixwell Avenue, New Haven 14, Conn. . . . or for more information check CP 1739 on handy form, pgs. 2&3.)

For a guide to processing ideas . . .

You'll find what you need in the handy Product Directory on pages 198 to 201. All products and processes are listed there.



*engineering knowledge
fabricating skill!
facilities . . .*

3 Important factors that make Blaw-Knox Autoclave-Reactors more reliable

Few pieces of process equipment require as much of a manufacturer's engineering knowledge, fabricating skill and facilities as an autoclave-reactor.

High temperatures and pressures, varying operating conditions, corrosion, charging and discharging, agitating, heating, control and safety instrumentation—all are important considerations.

- When you buy a Blaw-Knox Autoclave-Reactor you draw upon the *engineering knowledge* of specialists in each of these important phases of autoclave-reactor design.
- For the construction of your autoclave-reactor, you can depend upon the *fabricating skill* of men responsible for the one factor upon which the Blaw-Knox reputation is built—quality.
- Blaw-Knox *facilities* include seven large modern plants which specialize in the fabrication of ferrous and non-ferrous equipment, piping, and the production of heat and corrosion-resisting castings.

These are important factors to consider in the specification of an autoclave-reactor. They are the factors that make Blaw-Knox Autoclave-Reactors more reliable.

Blaw-Knox builds autoclave-reactors in any capacity, for any pressure, temperature or reaction. When you buy, be sure to specify Blaw-Knox.

Write for catalog 2413.



BLAW-KNOX COMPANY

Blaw-Knox Equipment Division

Process Equipment Department

Pittsburgh 38, Pennsylvania

When inquiring check CP 1740 on handy form, pgs. 2-3

VERSATILE BULK FEEDING... from a trickle to a torrent with VELOFEEDER

A mechanical vibrating feeder especially designed for free-flowing chemicals, fertilizer, pellets and similar materials at lower cost, higher efficiency.

Here's Why!

Higher Output—300 to 50,000 lb./hr. hard granular materials; 300 to 30,000 lb./hr. soft ground materials.

Lower Power Needs—1/8 hp. motor powers unit—inexpensive as a 100-watt light bulb!

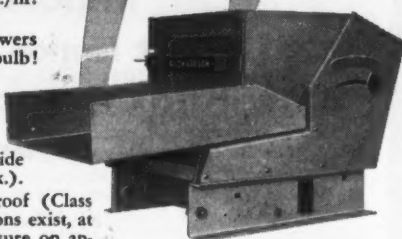
Smaller Space Needs—35 inches long, 17 1/2 inches wide, 19 inches high. Standard vibrating tray 16 inches wide—stainless steel when required.

Easier Control—simple adjustment over wide operating range (near 0 to 50 fpm. max.).

Safer Operation—motor is explosion-proof (Class 2, Group G), where hazardous conditions exist, at slight extra cost. Complete dust enclosure on application.

Less Vibration—working frequency is 1850 vibrations per minute; little or no vibration is transmitted to mounting installation (mounts with only 4 bolts!).

If you're interested in better bulk feeding at lower operating cost, write for Bulletin 5302 with complete specifications and drawing.

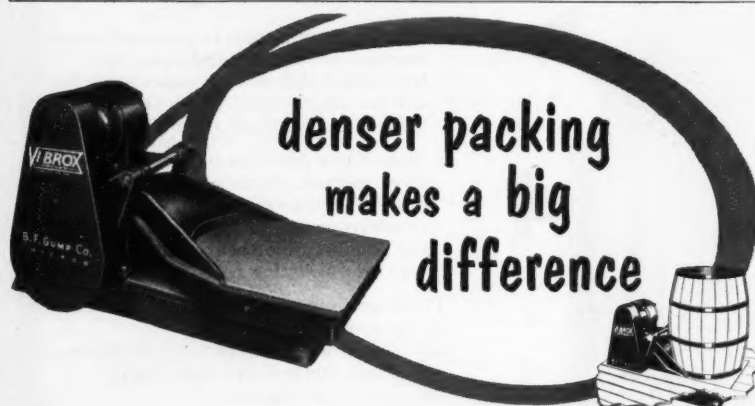


Richardson SCALE COMPANY, Clifton, New Jersey

Atlanta • Boston • Buffalo • Chicago • Detroit • Houston • Memphis • Minneapolis
New York • Omaha • Philadelphia • Pittsburgh • San Francisco • Wichita • Montreal
Toronto • Havana • Mexico City • San Juan

MATERIALS HANDLING BY WEIGHT SINCE 1902

When inquiring check CP 1741 on handy form, pgs. 2-3



denser packing
makes a big
difference

The VIBROX Barrel and Drum Packer with the exclusive mechanical rocking-vibrating motion packs more material in the drum or barrel or permits the use of smaller containers; cuts packing time; and reduces packing labor as much as one-third. Yes, in packing most dry powdered, flake, or granular materials, the VIBROX Packer makes a big difference in the over-all packing costs—big enough, many users say, to pay for the VIBROX in a few months.

Several sizes are available for packing boxes, cans, cartons, kegs, drums, and barrels having capacities of from 5 to 1000 pounds. Other models are used for packing bags weighing up to 150 pounds.

Several sizes are available for packing boxes, cans, cartons, kegs, drums, and barrels having capacities of from 5 to 1000 pounds. Other models are used for packing bags weighing up to 150 pounds.

Complete information and recommendations on request. Write today.

FEEDING • MIXING • SIFTING • GRINDING • WEIGHING • PACKING
and PACKAGING EQUIPMENT FOR THE PROCESS INDUSTRIES

B. F. GUMP CO.

Engineers and Manufacturers since 1872

1344 S. Cicero Avenue, Chicago 50, Illinois

When inquiring check CP 1742 on handy form, pgs. 2-3

PROCESSING

Distilled water protected by air filter...

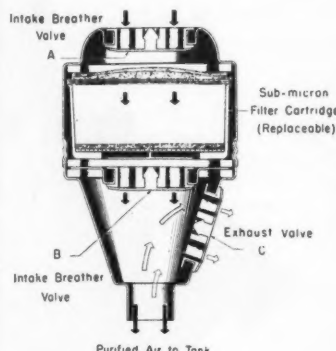
prevents vapors, alkali, acid gases from entering tank

Uses: Air filter protects stored distilled water from air-borne contamination.

Features: Recently conducted tests show that filter will remove organic vapors, and alkali and acid gases (even carbon dioxide when present in concentrations of almost 500 ppm).

Description: The Ventgard consists of a chamber with three breather valves and a filter element (see below).

Element is a replaceable cartridge



Air filter (diagrammed and labeled above) removes even carbon dioxide present in concentration of 500 ppm

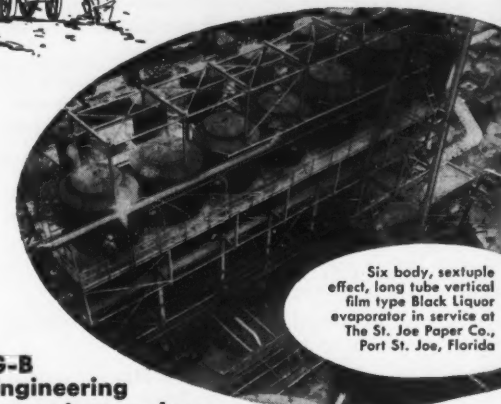
containing pre-filter, purifying chemicals and after-filter which remove the impurities.

Device attaches to vent line of water storage tank. When water level recedes, room air enters intake valve and passes through submicron filter cartridge where particulate matter is removed and gaseous impurities are chemically absorbed. When water level rises, intake breather valves automatically seal, expelling air through exhaust valve. When there is no change in water level, all valves remain closed.

(Distilled water storage tank air filter is product of Barnstead Still and Sterilizer Company, Dept. CP, Lanesville Terrace, Forest Hills, Boston 31, Mass. . . or for more information reader may simply check CP 1743 on the convenient Reader Service slip which is located between pages 2 and 3.)



**Longer Runs
between "BOIL OUTS"!**



Six body, sextuple effect, long tube vertical film type Black Liquor evaporator in service at The St. Joe Paper Co., Port St. Joe, Florida

G-B Engineering
know-how makes the difference!

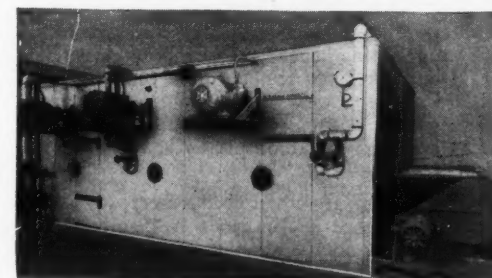
for, GOSLIN-BIRMINGHAM DESIGN ENGINEERS are also practical plant men with an understanding of plant and process problems. Thus, they are able to combine process knowledge with sound engineering practice to accomplish desired results in any given condition.

THERE IS NO SUBSTITUTE FOR EXPERIENCE

GOSLIN-BIRMINGHAM
MANUFACTURING CO., INC.
BIRMINGHAM • ALABAMA



When inquiring check CP 1744 on handy form, pgs. 2-3



"NATIONAL" CONVEYOR DRYER

Engineered to assure unequalled uniformity and speed under critical drying conditions, and to provide the lowest possible cost per unit of product dried.

Sizes range from small, compact 8' x 12' units to 300' long tunnel type constructions. Single or multiple apron — perforated, solid, wire mesh or slat. Cross, vertical, through or reverse circulation, or any combination.

Special features include flexibility of operation, ease of maintenance, and unit construction for economical future expansion.

Write for Complete Information

Chemical Dryers of All Types and Sizes



Special Drying and Heating Equipment

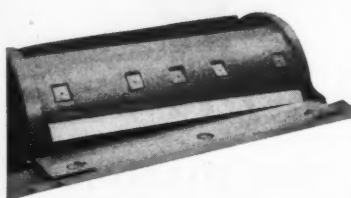
THE NATIONAL DRYING MACHINERY CO.

2709 N. Hancock Street, Philadelphia 33, Pa.

When inquiring check CP 1745 on handy form, pgs. 2-3

CHEMICAL PROCESSING

SHEARING ACTION of this CUTTER May Solve YOUR CUTTING PROBLEM



Knives on the revolving cylinder of the cutting element of our cutters engage the bed knife at an angle, dictated by our long experience in cutting materials of various characteristics.

As a result, the full power of the moving blades is concentrated at a single point, progressively along the length of the bed knife.

Let us demonstrate this shearing feature to you on a sample of the material you have to cut.

TAYLOR-STILES CUTTERS include machines that will cut sheet stock into uniform pieces of predetermined size and shapes, continuous strips or fibers into uniform lengths, and many other materials in various ways required for processing.

TAYLOR-STILES
CUTTING MACHINES & KNIVES

20 Bridge Street
Riegelsville, New Jersey

When inquiring check CP 1746
on handy form, pgs. 2-3.

AUGUST, 1954

PROCESSING

**Products dry faster, don't cake
in double-cone design
vacuum dryer . . .**

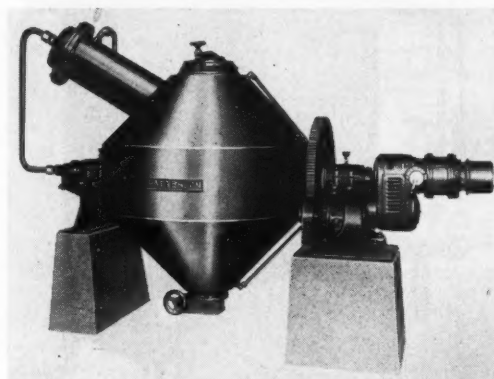
rapid intermixing assures uniform temperature throughout entire batch

Uses: Drying of temperature-sensitive products and easily oxidized material.

Features: Jacketed rotating double-cone design permits rapid drying of material without caking. Smooth interior results in maximum product contact with heat transfer surfaces. Dryer has no internal moving parts.

Unit can also serve as blender. Auxiliary condenser may be attached for solvent recovery.

Description: As unit rotates, surface layers of material being dried are constantly being deflected from the cone walls to center of batch. Result is free-falling, over-riding, cascading effect, without any breaking of crystals or other deformation



Double-cone dryer has smooth interior surface, can also serve as blender. Auxiliary condenser is available for solvent recovery

of product. Since no portion of dryer is perpendicular to axis, cascade pattern is continuously changing with no groups of particles taking parallel paths. Rapid intermixing assures uniform temperature throughout batch.

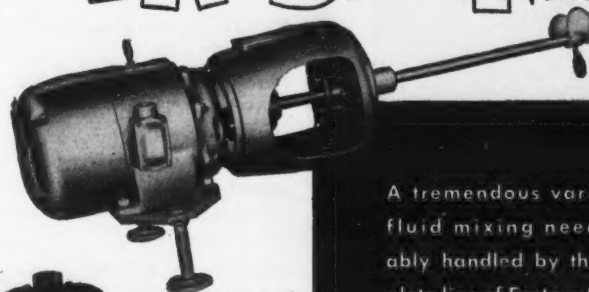
Unit's jacket is designed for 30 psi. Heat transfer fluid circulates through main gudgeon and is discharged by means of separate line through same gudgeon.

Vacuum is applied by means of standpipe through trunnion, which remains stationary as dryer rotates. Any ordinary vacuum pump may be used.

Machines are built in ten sizes. Working capacities range from one to 235 cubic feet. Construction may be of any weldable material. Horsepower requirements are directly proportional to density of product and optimum rpm of dryer. Exact requirements are determined by individual laboratory tests.

(Conaform dryers are product of The Patterson Foundry and Machine Company, Dept. CP, 41 Helene Street, East Liverpool, Ohio . . . or for more information check CP 1747 on handy form, pages 2 and 3.)

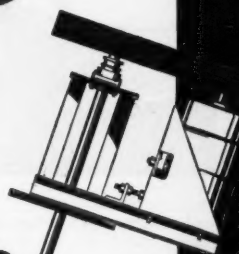
SOLVE YOUR MIXING PROBLEMS



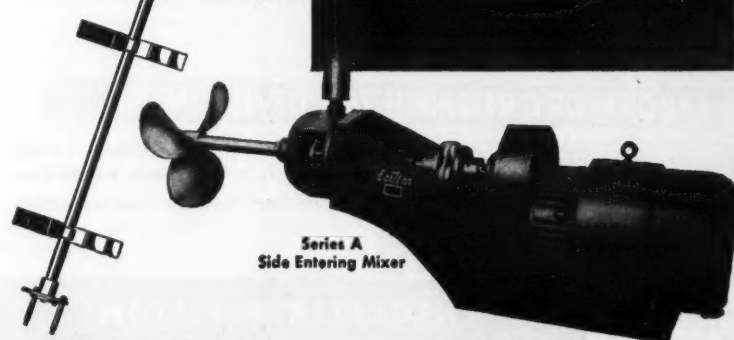
Series C
Side Entering Mixer



Series C
Top Entering Mixer



Model VB-WT
Turbine Mixer



Series A
Side Entering Mixer

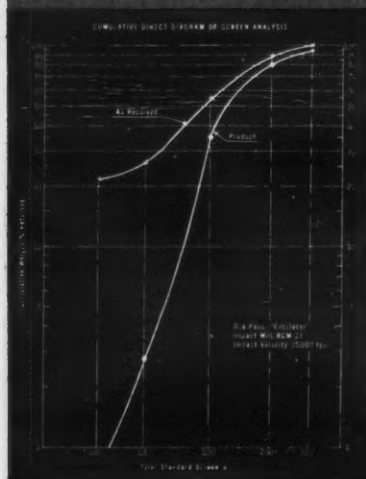
A tremendous variety of fluid mixing needs are ably handled by the complete line of Eastern Mixers. Size and power of mixers are flexible to help solve your problems. For complete information and engineering data, write for Eastern Fluid Mixing Catalogs. Eastern engineers are always available to work out your complex mixing problems with you.



Eastern INDUSTRIES, INC.
Dept. D, Regent St., Norwalk, Conn.

When inquiring check CP 1748 on handy form, pgs. 2-3

PARTICLE SIZE REDUCTION BY IMPACT!



Typical particle size curves . . . before and after processing material on the "ENTOLETER" Impact Mill

Belt Drive "ENTOLETER" Impact Mill equipped with 25 HP motor

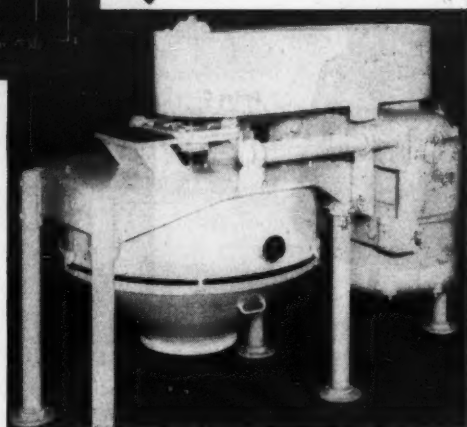
High Productivity Rates per HP expended

Narrow Particle Size Range . . . reduces quantity of "super fines"

Minimum Product Heating . . . refrigeration rarely required

High Impact Velocities . . . to 25,000 feet per minute dependent on application

Capacity . . . up to 10,000 pounds per hour or higher on friable materials



COMPACT . . .

a unit processing over 4 tons per hour occupies less than 14 square feet

SIMPLIFIED MAINTENANCE . . .

the single rotor and impact segments are readily removable for replacement

LABORATORY RESEARCH and DEVELOPMENT . . .

Possibilities for new "ENTOLETER" Impact Mill applications are being worked on continually in our laboratory in New Haven. We shall be glad to process samples and return them to you for your evaluation.

ENTOLETER DIVISION

The Safety Car Heating and Lighting Company, Inc.
1197 DIXWELL AVE., NEW HAVEN 4, CONN.

When inquiring check CP 1749 on handy form, pgs. 2-3

PROCESSING

Corrugated plate design featured in heat exchanger . . .

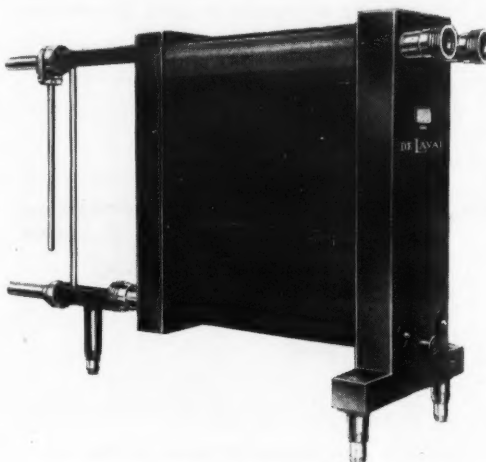
unit's operation results in high velocity, turbulence, heat transfer

Uses: Adaptable to virtually any industrial process where heating, cooling, or regeneration is required.

Features: Plates are pressed from extra-heavy stainless steel stock, have deeply corrugated surfaces for higher efficiency.

They resist distortion, withstand higher-than-average operating pressures. Corrugated design results in high velocity and extreme turbulence of liquid, and high heat transfer.

Description: Cooling, heating, and regeneration are accomplished simultaneously in various sections



Plates are pressed from extra-heavy stainless steel stock, and are able to withstand higher-than-average operating pressures

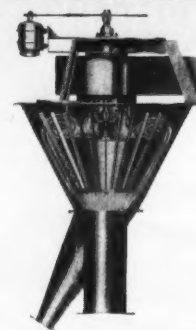
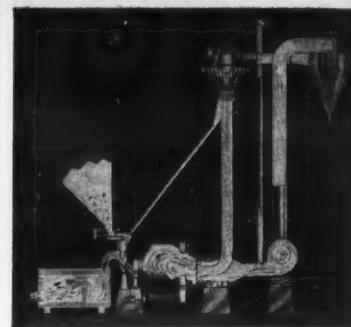
of exchanger. Plate gaskets can be easily replaced without returning plates to factory. Exchanger design complies with all sanitary requirements and allows "in-place" flush cleaning.

Liquids cannot leak between plates or mix with cooling or heating medium. Plates may be inverted and altered from time to time to adapt heat exchanger to process changes. Inlet and outlet parts of plate can be varied without use of new or extra plates.

Plates are easily tightened. Indicator marks stamped on tightening bars assure proper tension, uniform pressure, and maximum gasket life.

Exchangers come in wide range of sizes, models, and capacities.

(Plate-type heat exchanger is product of Special Process Division, The DeLaval Separator Company, Dept. CP, Poughkeepsie, N. Y. . . or for more information reader may simply check CP 1750 on the convenient Reader Service slip which is located between pages two and three.)



NEW HARDINGE "GYROTOR" PROVIDES CLOSE CONTROL OF PRODUCT

Hardinge Company, Incorporated, York, Pennsylvania, announces a completely new type of dry classifier—the "Gyrotor" Air Classifier, designed for extremely close control of product in a dry grinding or separating operation. It can be used in closed circuit with a pulverizing mill or as a self-contained sizing unit for any moving stream or air-solids mixture.

The classifier is basically an inverted, truncated-cone shell with a motor-driven, bladed rotor of similar shape revolving on a vertical center axis inside the outer shell. The raw mixture of coarse and fine air-borne material is fed in from the bottom of the cone, passes upward in the annular space occupied by the whirling blades, describes a doughnut-shaped motion above the rotor, and discharges through a central opening in the top. Oversize not removed by the impact of the blades drops out in the eddy current above the rotor and centrifugal action deposits it on the outer shell of the classifier, where it slides to the oversize discharge at the base of the shell. The returning oversize is definitely cleaned of fines due to the winnowing action of the rotor blades in the annular space.

The classifier has a wide range of fineness control, and adjustment of product size is made simply by changing the rotor speed.

Hardinge Bulletin AH-449-13 describes this new classifier in detail.

HARDINGE
COMPANY, INCORPORATED
YORK, PENNSYLVANIA • 140 Arch St. • Main Office and Works
New York • Toronto • Chicago • Hibbing • Houston • Salt Lake City • San Francisco

When inquiring check CP 1751 on handy form, pgs. 2-3

CHEMICAL PROCESSING

**Operating time 30-50% shorter
in cool tumbling barrel
for rubber parts . . .**

unit features manually operated push-button control with thermal overload protection

Uses: Barrel is designed for deflashing parts molded of soft rubber.

Features: Unit has guarded chain drive, variable-speed gearhead motor with magnetic brake, hinged door with spring-loaded latches, and manually operated push-button control with thermal overload protection.

Description: Thermostatically controlled low-temperature tumbling barrel uses liquid carbon dioxide and operates in temperature range of 0 to -120°F. Carbon dioxide is stored in separate tank and is fed through appropriate controls into barrel where it expands and absorbs heat to provide desired low temperature.

Unit is octagon in shape, lined with stainless steel, and insulated with 3" thick insulation. Pull-down is rapid. Maker states that both operating and cooling times are 30 to 50% shorter than normal. Results are uniform, rejects minimum.

Outside barrel is 30" diam x 36" long. Inside barrel is 26" diam x 33" long. Unit weighs 1200 lb and requires floor space 46" x 58" x 65" high. Liquid carbon dioxide controls are furnished completely assembled and installed. Indicating thermostat is manually set to maintain controlled temperatures. Barrel can be supplied without controls for operation with dry ice. Motor is available with voltage rating to meet individual requirements.

(Tumb-L-Matic barrel is product of Tumb-L-Matic, Inc., Dept. CP, 4510 Bullard Avenue, New York 70, N. Y. . . . or for more information reader may simply check CP 1752 on the convenient Reader Service slip which is located between pages two and three.)

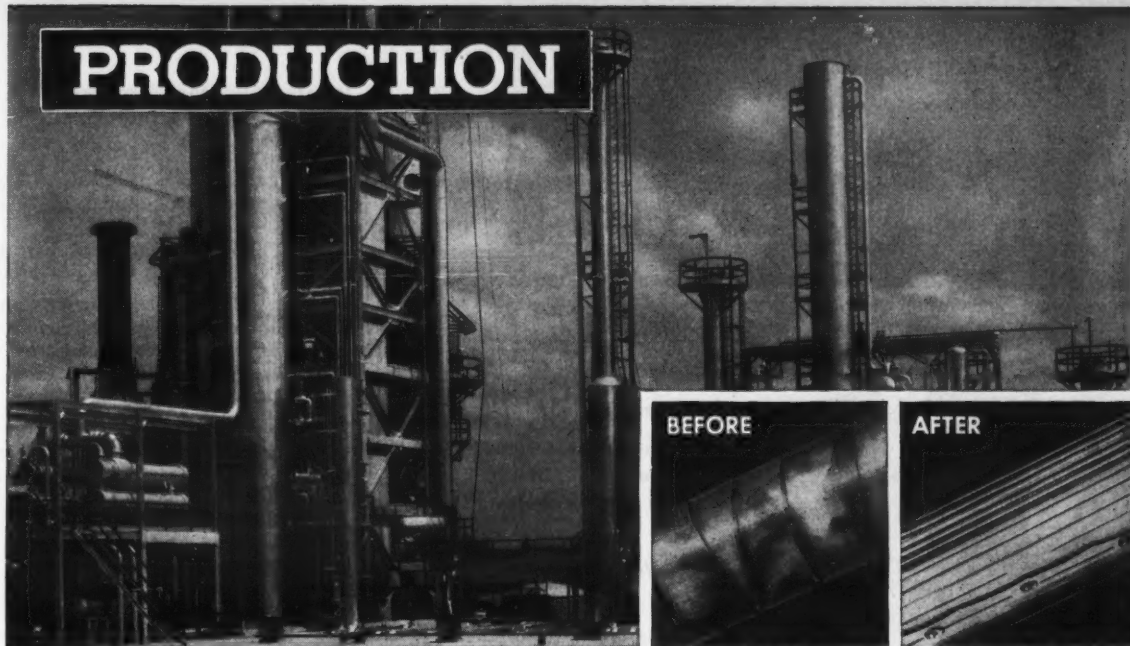
**Over 60 photographs highlight
processing equipment catalog**

Custom-made lined and unlined processing equipment is illustrated and described in 44-page catalog. Units fabricated by manufacturer include absorbers, digesters, kilns, towers, all types of vessels, evaporators, filters, and complete plants. Linings can be of lead, Hastelloy, stainless steel, nickel, tin, rubber, plastic, or other corrosion resistant materials.

Booklet outlines history of company, shows plant and departments, and discusses services offered. Over 60 photographs are featured, some in color. Catalog includes listing of approximately 80 users of company's services.

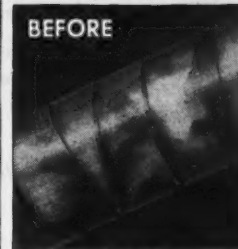
"Treadwell Construction Company" is issued by Treadwell Construction Company, Dept. CP, Station A, Midland, Pennsylvania. When inquiring reader may simply specify CP 1753 on the convenient Reader Service slip which is located between pages 2 and 3.)

PRODUCTION

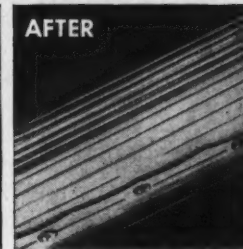


Oklahoma plant uses new kind of aluminum jacketing for weather-proofing insulated towers, vessels and lines—eliminates costly maintenance and replacement of old-fashioned coverings.

BEFORE



AFTER



Old insulated lines with ordinary weatherproofing are unsightly.

Aluminum jacketed lines are modern, clean—even after severe weathering.

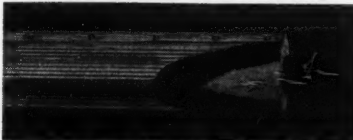
New Aluminum Jacketing Protects Insulated Lines...Cuts Costs 28%



Two men can install jacketing—easily. No special shop work needed.



Pliers pull aluminum strapping tight—no special tools needed for job.



Another way to attach jacketing is to use sheet metal screws.

How 986 of America's Leading Companies Save Money By Weather-proofing Insulated Lines This New Way:

Up-to-date appearance, low cost, and long life go hand in hand in a new aluminum jacketing for insulated lines. Developed by Childers Manufacturing Co., Houston, Texas, it is the first permanent weather-proofing that offers both low initial cost and low application cost.

Childers Jacketing, made of tough 3S aluminum alloy for maximum corrosion resistance, lasts years without painting or other maintenance. It costs less than even the cheapest kind of weather-proofing, when the cost of one paint job is considered. Savings run up to 28%.

Cost-minded engineers are also impressed with the gleaming beauty of Childers Jacketing that means "good plant housekeeping."

Available with moisture barrier attached, for use over 85% magnesia insulation.

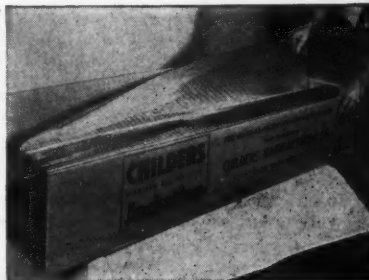
3 years of tests and major installations in 986 of America's leading processing plants, refineries, and power plants have proven the advantages of Childers Aluminum Jacketing over other types.

Try this low-cost protection in your plant. Write today for engineering data

and information about how you can order a 400 sq. ft. roll to test on one of your insulated lines. No obligation.

Address Childers Manufacturing Co., Dept. LP-9, 3620 W. 11th St., Houston, Texas.

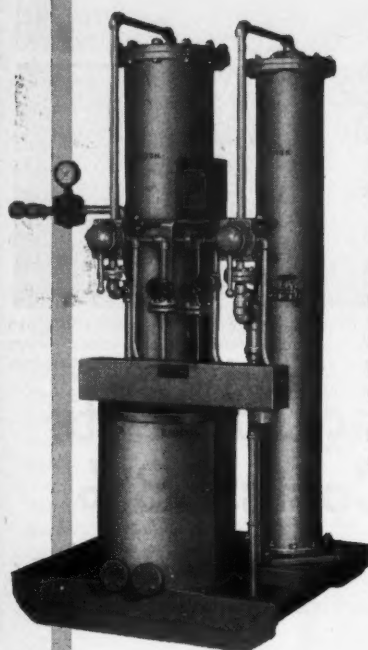
Engineering representatives in all principal cities to work with you on your problems.



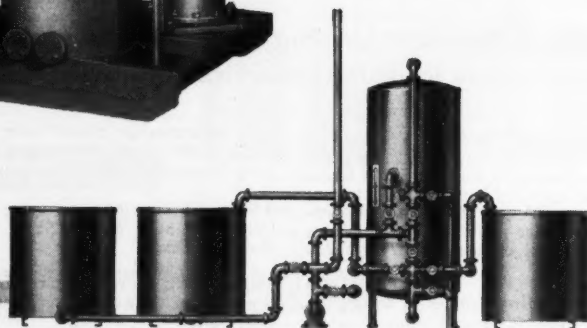
Each roll of Childers jacketing comes factory packaged, light enough for one man to carry. Just take jacketing from box—cut to length with strong pocket knife and install. No expensive tools, no forming required. (Advertisement)

When inquiring check CP 1754 on handy form, pgs. 2-3

PRACTICAL APPLICATIONS OF ION EXCHANGE



Demineralization of Water
Deacidification of Solutions
Selective Removal of Troublesome Constituents from Chromic Acid, Plating and Anodizing Baths
Recovery of Valuable Metals
Removal and Recovery of Offending Ions in Waste Waters
Selective Removal of Contaminants from Chromic Acid Copper Stripping Solution
Substitution of Anions and Cations in Solutions



Get Details from INDUSTRIAL

The success stories of ion exchange are not isolated cases. All through industry in a wide variety of applications, ion exchange is effecting substantial cuts in costs, more uniform products, and a new ease in process control.

Here are a few suggestions for you to check against your own processing. INDUSTRIAL is glad to give you the benefit of its experience if you will outline your requirements. An estimate of probable savings, production, approximate costs, and the equipment required will enable you to know what ion exchange can do for you.

4946

INDUSTRIAL

FILTER & PUMP MFG. CO.

5908 Ogden Avenue • Chicago 50, Illinois

PRESSURE FILTERS
 DEMINERALIZERS
 RUBBER LININGS
 HEAT EXCHANGERS
 CENTRIFUGAL PUMPS

When inquiring check CP 1755 on handy form, pgs. 2-3

PROCESSING

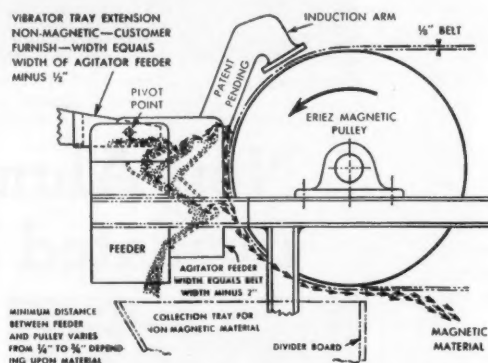
Waste steel dust recovered by agitator separator has value . . .

magnetic device designed for separating metals having magnetic content of 20% or more

Uses: For separating metals having magnetic content of 20% or more from non-magnetic materials.

Features: Agitator separator is non-electric, requires no wiring, fuses, or generator equipment, is not affected by power lags or surges. Magnetic strength derived from Alnico V metal, lasts indefinitely.

Description: Device combines an agitator feeder with a non-magnetic belt pulley having alternate north and south poles parallel to pulley shaft. As pulley revolves, pulsating magnetic field extending from its surface causes magnetic portion of material being fed into agitator to tumble or "walk" across



Separator reclaims steel (containing expensive metals such as nickel, cobalt, tungsten, or chromium) from non-magnetic materials

number of inclined baffles until it reaches pulley. Here it is held on moving belt until it passes beyond magnetic field, where it drops into a tray. Meanwhile, non-magnetic material, striking baffles in agitator feeder, fall freely down inclines into separate tray.

Unit has been successfully used to reclaim steel dust, having an approximate composition of 60% steel and 40% grinding compound, derived from grinding surface scale from high-alloy-steel billets. Dust, previously considered waste product, has considerable value. Nail whisks have also been easily reclaimed from sawdust.

(Magnetic agitator separator is product of Eriez Manufacturing Company, Dept. CP, 13 Magnet Drive, Erie, Pennsylvania . . . or for more information check CP 1756 on handy form, pages 2 and 3.)

Density-temperature-concentration relationships for silicones. Nomograph on page 188.



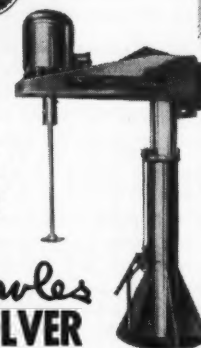
Celanese
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SINCLAIR



ALL
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The **Cowles**
 DISSOLVER



. . . because it dissolves and disperses 2 to 20 times faster — and in the same space ordinary mixers require! The secret: the Cowles impeller which operates at velocities up to 7,500 f.p.m.

The Cowles Dissolver saves not only time and labor, it improves your product and yield per batch as well. It's rugged, fast-loading, easy to maintain, performs tasks other mixers cannot.

GET
 THE FACTS

. . . on the Cowles Dissolver — send for a catalog today! And ask to have a detailed test run on your materials.

The **Cowles Company**
 INCORPORATED

THE COWLES COMPANY, INC.

121 Trackside, Cayuga, N.Y.

Gentlemen: Please send me your latest Cowles Dissolver catalog.

NAME _____

COMPANY _____

ADDRESS _____

CITY AND STATE _____

When inquiring check CP 1757 on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROCESSING

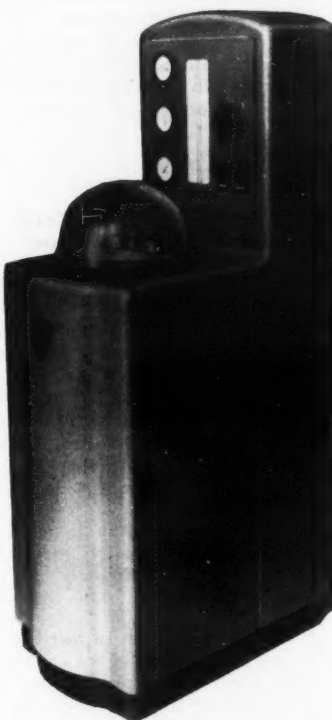
Dual orifice meter used in chlorinator . . .

allows feed ranges up to 100 to 1, has automatic control

Uses: As metering device for feeding chlorine into organics or liquids.

Features: Dual orifice feeds chlorine automatically or manually in ranges up to 100 to 1.

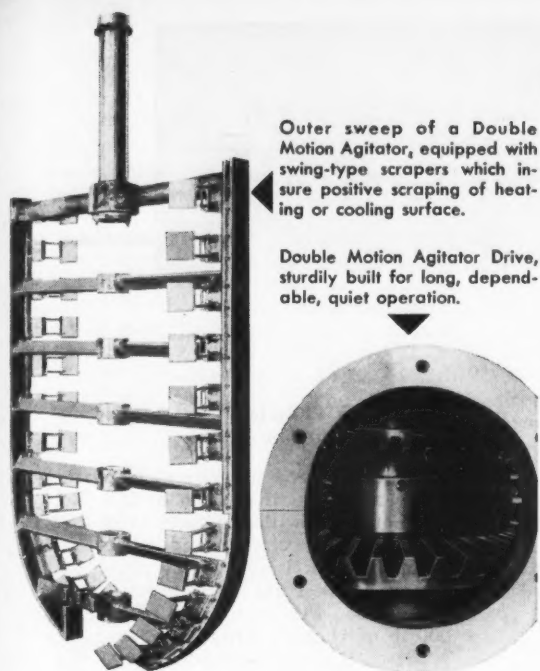
Description: Chlorinator is constructed of corrosion-resistant material wherever possible. Pedestal is made of heavy fiberglass. Unit has automatic electric, hydraulic, air or vacuum controls.



Chlorinator feeds up to 1000 lb chlorine/24 hr

Chlorinator has glass-enclosed visible-vacuum and water-diaphragm chlorine feed control system. Maximum capacity is 1000 lb/24 hr. Linear scale indicates flow rates.

(A-701 Chlorinator is product of Wallace & Tiernan Incorporated, Dept. CP, 25 Main Street, Belleville 9, N. J. . . . or for more information reader may simply check CP 1759 on the convenient Reader Service slip which is located between pages 2 and 3.)



Outer sweep of a Double Motion Agitator, equipped with swing-type scrapers which insure positive scraping of heating or cooling surface.

Double Motion Agitator Drive, sturdily built for long, dependable, quiet operation.

Q: Why was a new Double Motion Agitator Drive developed for *Buflovak* Processing Kettles?

A: To provide rapid, uniform mixing of heavy, viscous material.

Q: Do the new self-loading *Buflovak-Dopp* Scrapers offer additional advantages?

A: Offer speed-up of heating and cooling operations ranging up to 500%.

Do you have questions about *Buflovak-Dopp* Kettles?

Most everyone has some questions. And many of them have found the answers through pre-testing their products in our Pilot Plant . . . an important part of the *Buflovak* Research and Testing Laboratory . . . which is maintained and staffed to help you.

Whether you want to improve your present processing methods or find the most effective method for new and untried processes, the safest procedure is to process a quantity of the product and observe results.

This accurate data, when gathered and evaluated, will determine the precise equipment needed. Kettles can then be designed and built to most economically and profitably fulfill your expected requirements.

For more complete information about *Buflovak-Dopp* Processing Kettles, write for Catalog 356-R.

BUFLOVAK EQUIPMENT DIVISION

BLAW-KNOX COMPANY

1645 Fillmore Avenue, Buffalo 11, New York

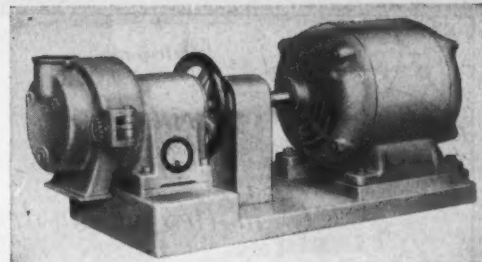


BUFLOVAK PRODUCTS: evaporators • dryers (atmospheric and vacuum) • solvent recovery and distillation equipment • chemical plant equipment • food processing equipment • kettles • fabricated processing equipment • vulcanizers plus a complete Pilot Plant for pretesting processes and products.

When inquiring check CP 1758 on handy form, pgs. 2-3

AUGUST, 1954

For reducing or blending viscous products



Bauer TEXTURIZER HOMOGENIZER

THE BAUER BROS. CO.

1719 Sheridan Ave.
Springfield, Ohio

This machine is especially designed for milling and mixing such substances as nut butters, spreads, cottage cheese, baby foods, pastes, and creams.

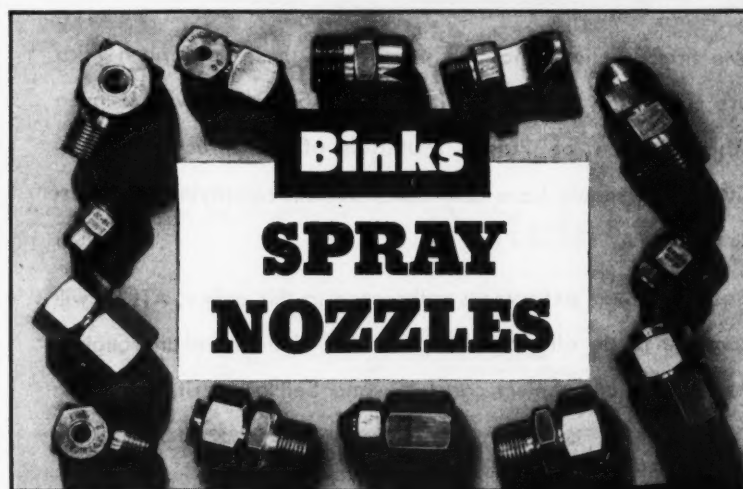
Using nut butter as an example, No. 148-1 (illustrated) reduces the material to the desired degree of fineness as determined by the precise adjustments. Sufficient heat can be generated for incorporating a hydrogenated oil stabilizer. The result is a thoroughly homogenized mixture with good spreading consistency. The mill case can be liquid cooled where product temperatures should not be raised.

For cottage cheese processing, No. 148-1F is built of stainless steel. Internal parts are readily accessible for sterilizing. Standard equipment includes a 10-gallon hopper with cover.

Bauer Texturizer-Homogenizers in a variety of models can be direct-connected with 1 h.p. to 20 h.p. motors depending upon the wanted rate of production. V-belt drives are also available.

If you have a possible application for this versatile machine, ask for full information. We are prepared to make test runs of your product in our research laboratories. Write, wire, or phone.

When inquiring check CP 1760 on handy form, pgs. 2-3



Binks SPRAY NOZZLES

for chemical spraying, cooling, humidifying, dehydrating, and hundreds of other applications. You'll get the right nozzles quicker by calling Binks...manufacturers of one of the most complete nozzle selections ever produced.

You'll have a wide range of spray patterns, sizes, capacities from which to choose...with nozzles cast or machined from any standard or special corrosion-resistant metals. Send for comprehensive catalog.

Binks Manufacturing Company
3120-32 Carroll Ave., Chicago 12, Ill.

When inquiring check CP 1761 on handy form, pgs. 2-3

MAIL COUPON NOW!

Binks Manufacturing Co.
3120-32 Carroll Ave.,
Chicago 12, Ill.
O.K. Binks, send me your
Spray Nozzle Catalog...

Name _____
Company _____
Address _____
City _____ Zone _____ State _____

Statement of Principles by the Plastics Industry

PLASTIC materials challenge industry with new concepts of design, engineering, construction, processibility and usefulness.

The properties of plastic materials, when correctly used, open up great new areas of service to industry and the public.

Improper use can do irreparable damage to the plastics industry, to both manufacturers and processors of the materials.

Therefore, we as manufacturers and processors of plastic materials reaffirm our adherence to the principles upon which the healthy growth of a great industry depends and undertake to:

- I. Understand thoroughly the properties and limitations of all plastic materials handled by us;
- II. Apply the correct plastic materials to all industrial end uses, designing and engineering them for maximum value, performance and safety;
- III. Use great care to select the correct plastic materials for all consumer items, designing and engineering them to insure value, satisfaction, safety and pleasure to all users;
- IV. Sell plastic materials, and all industrial and consumer items made therefrom, on the merits of the materials, applications and design, and free of extravagant, insupportable claims.

All to the end that plastic materials already available, and others that may come, will bring to industry and public alike all the benefits, economies and satisfactions inherent in these versatile engineering and construction materials.

Manufacturing Chemists' Association, Inc.

William C. Feltner, President

The Society of the Plastics Industry, Inc.

John O'Connell, President

Proprietary Plastics Manufacturers Association

Spencer A. Wright, President

The Society of Plastics Engineers, Inc.

John W. Le Ralle, President

Plastic Coatings and Film Association

Stewart H. Kutz, President

Accepted:

The Atlas Mineral Products Co.

Raymond E. Seybold, President

We firmly believe that the practice of these principles which are completely in accord with the ATLAS POLICY will minimize misapplication of Plastic Materials of Construction.

Customers should have confidence in firms complying with these principles.

Based on over sixty years adherence to this policy, ATLAS will continue to do all within its power to: Understand thoroughly, Apply correctly, Select carefully, and Sell on merit, all plastic materials for corrosion-proof construction that it produces.

PLASTIC

CEMENTS • COATINGS
RIGID FABRICATIONS • PIPE
LININGS • FOAMS



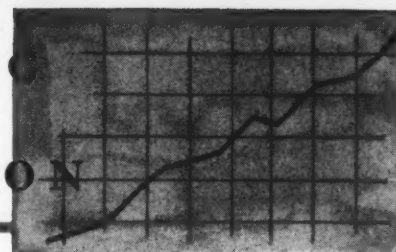
ATLAS
MINERAL
PRODUCTS CO.

MERTZTOWN, PENNSYLVANIA

PLASTIC MATERIALS FOR CORROSION-PROOF CONSTRUCTION

When inquiring check CP 1762 on handy form, pgs. 2-3

EXPANDING CHEMICAL PRODUCTION



Company formed to make isocyanate compounds

Mobay Chemical Company, jointly owned by Monsanto Chemical and Farbenfabriken Bayer, A.G. of Leverkusen, Germany, has been incorporated in Wilmington, Del. New company will manufacture isocyanate compounds. No decision has been reached as to size or location of facilities.

Allied Chemical & Dye Corp. to build refrigerants plant

Danville, Illinois, has been selected as site for new plant to produce refrigerants and aerosol dispersants. Allied Chemical & Dye's General Chemical Division has exercised options to purchase 73-acre site for plant east of Danville near Route 10. Company expects to start construction immediately and has set early 1955 as target date for completion.

Salt-free sulfonates from liquid SO₃

Full-scale production of salt-free sulfonates is now underway at Ninol Laboratories' Chicago works. This plant is one of the first in the country to produce specialty sulfonates from liquid sulfur trioxide. Use of sulfur trioxide instead of conventional oleum has advantage of producing salt-free sulfonates without need of costly desalting process.

New lithium plant underway at Bessemer City, N.C.

Lithium Corporation of America is erecting new plant at Bessemer City, N.C., for increased production of lithium chemicals. Ground has been broken and utility contracts concluded. Unit is expected to come on stream during December, 1954. Production against already existing contracts is expected to be met during early 1955.

Naugatuck Chemical boosts production

Current expansion program of Naugatuck Chemical, chemical division of U.S. Rubber Company, will add 50,000,000 lb of nitrile rubber, plastics and agricultural chemicals to division's annual capacity by end of year. Total yearly production by end of 1954 will be in excess of 600,000,000 lb of chemical products. Naugatuck is presently doubling production of Marvinol vinyl resins in its Painesville, Ohio plant; tripling Kralastic molding powder production in its Baton Rouge, La., plant; constructing additional agricultural chemical production facilities at Naugatuck, Conn., and expanding its latex plant in Los Angeles.

Expand NH₃ production by 50,000 tons/year

Hopewell, Virginia, plant of Nitrogen Div., Allied Chemical & Dye Corporation, is being expanded by 50,000 tons per year. This installation also produces nitrate of soda, nitrate-limestone fertilizer, and fertilizer solutions. Ammonia production facilities of Allied's nitrogen plant at Omaha, Nebraska, have also been recently completed. Urea production unit will be on stream soon at the \$25 million plant.

Construct unit for production of synthetic silicates

Johns-Mansville Corporation has begun construction of plant at Lompoc, Calif., for manufacture of synthetic silicates from diatomite. Installation will come on stream in 1956 and is located adjacent to present J-M operations at Lompoc where the company owns and operates one of the world's largest and purest deposits of diatomite. Synthetic silicates will be manufactured directly from crude diatomite by reaction with lime or magnesia under pressure.

Lumber treating firm purchased by Koppers Company

Purchase of American Lumber & Treating Company by Koppers Company, Inc., has been consummated. Plants of AL&T, all of which utilize pressure-treatment method of preserving wood with creosote or special salts, are located at Everett, Wash., Wauna, Ore., Wilmington, Calif., Crossett and Fordyce, Ark., Shreveport, La., Port Newark, N.J., Baltimore, Md., Florence, S.C., and Gainesville, Fla.

Koppers selects Port Arthur, Texas as site for polyethylene plant

Koppers Company's Chemical Division expects to have production underway in mid-1955 at Port Arthur, Texas, polyethylene plant. Koppers' new polyethylene plant will be located on portion of 1000-acre site purchased several years ago. In early 1953 company began production of ethylbenzene on site. Koppers' polyethylene plant will purchase ethylene gas from facilities being constructed at nearby refinery of Gulf Oil Corporation.

Archer-Daniels-Midland buys two resin plants

Purchase of the resin division of U.S. Industrial Chemicals Company by Archer-Daniels-Midland Company has been announced. Involved in sale were two USI resin plants at Newark, N.J., and Pensacola, Fla., along with inventories, formulations, and trademarks. Addition of Newark and Pensacola units gives A-D-M total of six plants which can produce alkyd resins.

Fuel company plans NH₃ plant to come on stream in 1956

Construction is now underway on a \$15 million ammonia installation for Mississippi River Fuel Corporation. Plant is being erected on a 4700-acre site near Crystal City, Missouri, 35 miles south of St. Louis. The Flour Corporation, Ltd., is prime contractor. Mississippi River Fuel expects to be supplying anhydrous ammonia, ammonium nitrate, and ammonia solutions to the fertilizer industry and other industrial accounts by early 1956.

Spencer Chemical expands plant at Henderson, Kentucky

Nitric acid facilities and plant for Spensol (a solution of ammonium nitrate plus free ammonia, used as a fertilizer additive) has been authorized for Spencer Chemical Company's Henderson (Ky.) plant. Plans provide for transferring Spensol plant formerly operated by Spencer Chemical at Charlestown, Ind., to Henderson. Total cost of expansion program will be about \$1,750,000.

Leases ordnance plant for production of NH₃

Hercules Powder Company has leased (with an option to buy) government-owned Missouri Ordnance Works. Plant consists of three high-pressure anhydrous ammonia lines which use natural gas as raw material. Rehabilitation of the plant is already underway with start-up date set for mid-July. Capacity production (42,000 tons) is expected to be reached during September. Plant will employ approximately 150 during peak operations.

New process for making H₂O₂ developed by Allied Chemical

Engineering and design work for plant employing new process for manufacture of hydrogen peroxide is underway by Solvay Process Div., Allied Chemical & Dye Corporation. Location of the plant will be decided at a later date. Work on the process was initiated by Allied Chemical's Central Research Laboratory at Morristown, N.J. In contrast with electrolytic method of H₂O₂ production, Solvay's process involves chemical oxidation reaction of raw materials available within Allied's organization.

Rubber accelerator output doubled by Cyanamid

Rubber chemical-accelerator installation recently opened by American Cyanamid at its Bound Brook, N.J., plant more than doubles company's production of NOBS SPECIAL and NOBS NO. 1 accelerators. Compounds were developed for use in reinforcing (high pH) furnace blacks in natural rubber and GR-S.



**Like to have
a picture story
of this
petro-chemical
plant?**



Write for this booklet today!

Here's a brochure that's almost as good as a guided tour through the Tuscola, Illinois plant of National Petro-Chemical Corporation. It's a picture story, in brochure form, of the design, construction and engineering of one of the world's largest petro-chemical plants.

Twenty-four pages of photographs let you see for yourself the complexity of this \$50,000,000 installation, for which J. F. Pritchard & Co. was the major contractor.

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Please send me my complimentary copy of your brochure describing the National Petro-Chemicals Corporation's Tuscola, Ill. plant.

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Position

Firm

Address

City Zone State

When inquiring check CP 1763 on handy form, pgs. 2-3

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CHICAGO EYE SHIELD COMPANY
2316 Warren Boulevard, Chicago 12, Illinois



CESCO FOR SAFETY

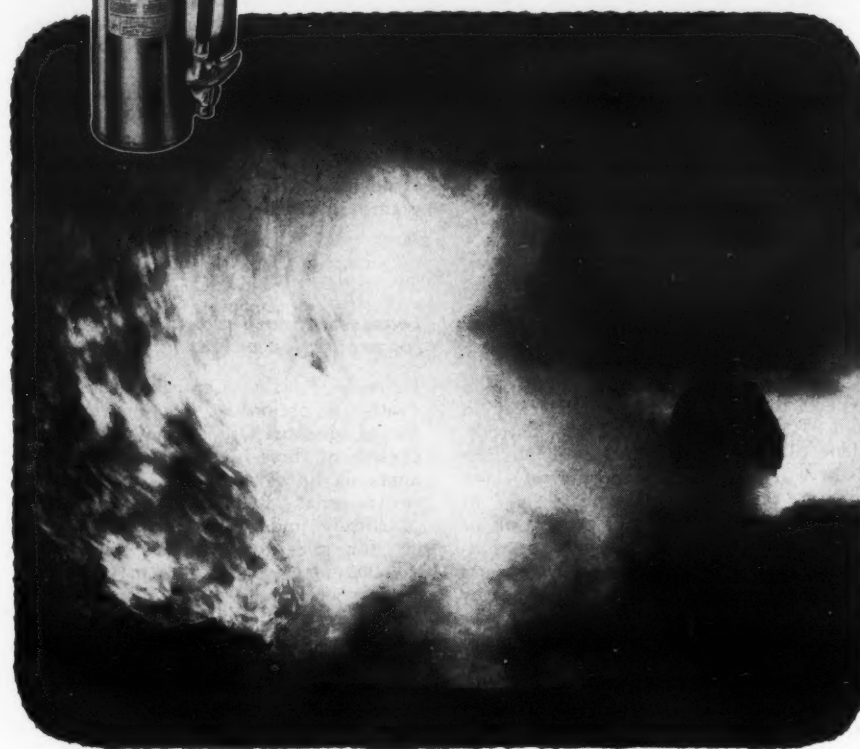
When inquiring check CP 1764 on handy form, pgs. 2-3

safety



Type of dry chemical fire extinguisher used in fire tests

Fire fighters conducting tests to determine best methods of combatting dust fires and explosions



Utilizing dry chemical fire equipment to make atmosphere inert helps in . . .

combating combustible dust fire and explosion hazards

Combustible dusts are among the most serious fire and explosion hazards found in industry. Most materials which burn at a moderate rate when in large particles, burn much more violently when finely divided. Finer particles have more surface area in relation to the amount of material in the particle which has to be heated to combustion temperature. When all of these surfaces are exposed to air and a spark or other source of ignition is present, rapid combustion occurs and builds up high pres-

sure quickly in the hazardous areas.

If dust is lying dormant on a floor, roof or beam, a smoldering fire will often result. However, if extinguishing agent used on fire stirs particles into a dust cloud, an explosion can result. Thus, large losses have been sustained, with most of the damage due to secondary explosions caused by agitation of dust layers by the first explosion.

To reduce damage and yet control these fires, extinguishing agents should be used which

will provide a positive, non-combustible opaque coating on combustible dust particles. In addition, extinguishing agent must be applied so that dust clouds are not formed. In those cases where dust agitation is unavoidable, the extinguishing agent must be able to make dust cloud inert as it is formed.

It was found that dry chemical fire equipment not only does this but also can be used for inerting dusty room interiors to reduce explosion hazard. This is done by discharging a dry chemical extinguisher into danger area so that the dry chemical settles over beams, ledges and other places where dust collects.

Tests conducted by Factory Mutual Laboratories indicated that dry chemicals were three times more effective than talc in producing inert atmospheres. It was found that a cloud of cornstarch containing 20% dry chemical would not explode, while a concentration of 60% talc was required to prevent an explosion. Contents of a 20-lb dry chemical extinguisher can make 4000 cu ft inert while 20 lb of talc renders only 1300 cu ft inert.

At all times good housekeeping is important to any location subject to combustible dust conditions. Efficient dust collecting systems, dust-tightness of handling equipment, and elimination of ledges and other collecting surfaces is a good practice. Provision of explosion venting windows, hatches, roofs and panels is also important. Water extinguishing equipment, where necessary for complete extinguishment of embers, should be of a type which will not deliver a stream of water but should provide water in a fine spray or fog.

(Dry chemical equipment is manufactured by the Ansul Chemical Co., Dept. CP, 3300 Hegley St., Marinette, Wis. . . or for more information check CP 1765 on handy form which is located between pages two and three.)

Have You Wondered Why —

a manufacturer's name and address appear at the end of many articles . . . ?

The "source" of editorials, which we indicate by publishing a company name and address at the end of many articles, is not "advertising" for the manufacturer. It's put there to help you get more information on processes, materials, ideas, and equipment which interest you. (Have you wondered, "Is this some new form of advertising?" No — it's a new type of editorial service.) It also helps us to decide, from your response, which subjects you want most in CHEMICAL PROCESSING. Our handy Reader Service slip, located between pages 2 and 3, helps you to get the details you want in a hurry . . . helps us in lining up future issues.

THE EDITORS

TRAMP IRON PULLED FROM LIQUID-CARRYING PIPES

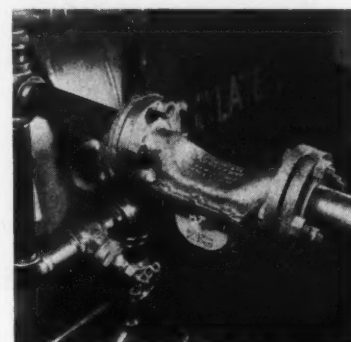
by **ERIEZ** Permanent Magnetic Traps

Product Contamination, Machinery Damage and Production Tie-Ups Due to Loose Iron Stopped Automatically by Eriez Installations!

The Eriez Permanent Non-Electric Magnetic Trap, one of many types of Eriez installations, was designed for economical, efficient protection against the passage of tramp iron through pipelines carrying liquids and semi-liquids. The powerful magnetic alloy, Alnico V, makes the trap suitable even for pressurized lines.

Fine ferrous objects and large iron scraps are pulled from the liquids and held by the Eriez permanent magnets, protecting the product from contamination, protecting pumps, screens, grinders, fillers, etc., from damage and protecting management against man-hour losses and production losses.

The Eriez Pipeline Trap consists of a non-corroding metal housing and a specifically engineered magnet which is not affected by temperature. Cleaning is simply accomplished by easily removing the face plate. This is the only maintenance. The Alnico V castings keep their power for a lifetime. There are no wires. No upkeep. The first cost is the last cost! The Eriez Trap is available with iron pipe threads or Sanitary threads in 2", 2½", 3", and 4" pipeline sizes.



Chocolate Protected Against Fine, Metal At Hooton

Hooton Chocolate Company, well known chocolate manufacturer of Newark, N. J. provides positive and automatic quality control in a line carrying liquid chocolate by installing an Eriez Magnetic Trap. The installation is able to remove ferrous particles so small that they could pass through a 300

mesh screen! This simple, inexpensive assurance against product contamination by iron of any size is an example being repeated by food and chemical processors across the country. Not only product contamination but machinery damage and shut-downs caused by larger pieces of tramp iron are also avoided.

NOW! FROM ERIEZ, PIONEERS OF MAGNETIC EQUIPMENT . . . THE "MAGNALARM", A MAGNETIC SEPARATOR WITH A BRAIN!

Here is what the industry has been waiting for! The "Magnalarm", just developed by Eriez, is a permanent magnetic separator with a built-in "brain" that signals you automatically when a predetermined amount of tramp iron is caught by the separator. The alarm signal can consist of a light going on . . . or a bell ringing . . . or can shut down your machinery! Here is the maximum insurance against the danger presented when the separator is neglected by maintenance men . . . or is in a difficult position . . . or catches an unforeseen amount of tramp iron. The problem posed by the fact that any magnet temporarily loses part of its "pull" when covered with tramp iron is now solved. The "Magnalarm", with its ferrometer brain, tells you when your magnet reaches the minimum efficiency. You rest secure in the knowledge that your magnetic separator is *always* on guard . . . protecting you from an overflow of tramp iron that can result in expensive fires, machinery damage and product contamination. The cost? Only a little more than a regular magnetic separator. Simple to install. Write for the free bulletin. You'll agree on reading all the details that the "Magnalarm" is the most revolutionary forward step in magnets since Eriez introduced the non-electric permanent-type magnet!

ERIEZ
MAGNETS

Super Sweeper keeps plant aisles, lots, etc. free from nails, scraps

Eriez Permanent Magnetic Super Sweeper removes dangerous tramp iron from floors, parking lots, warehouses, etc. Four sizes in three mag-

netic strengths. Manual or mechanical operation . . . and you can pull it, push it or suspend it. Write for free bulletin on this versatile trouble saver.

Want more information? Free bulletins are yours for the asking . . .
Send along the handy inquiry coupon below for complete information.

ERIEZ MANUFACTURING COMPANY, 73H Magnet Drive, Erie, Pa.



Please send me the following bulletins:

- Eriez Non-Electric Magnetic Pipeline Trap ☐
- Eriez Magnetic Separators for the Food Industry . . . ☐
- General Catalogue ☐
- Super Sweeper Bulletin ☐
- Magnalarm Bulletin ☐

Name _____
Address _____
Company _____ Title _____

When inquiring check CP 1766 on handy form, pgs. 2-3

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Wears like iron — takes endless rubbing, scraping, snagging, and still gives full protection.

100% Waterproof — made with top quality base fabric saturation-coated first and then coated with 6 coats of Neoprene Latex.

Positively will not blister, crack or peel. Its longer lasting quality means greater economy.

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Cambridge, Massachusetts

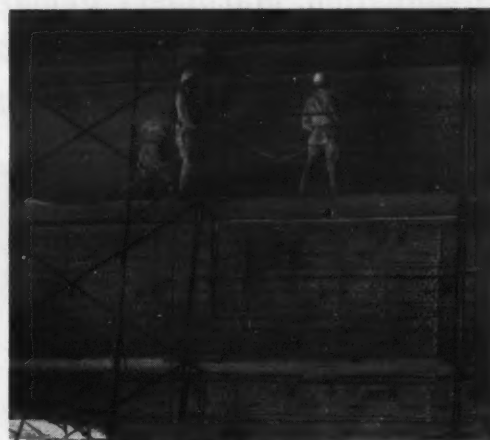
When inquiring check CP 1767 on handy form, pgs. 2-3

SAFETY

Machine-applied plaster allows high speed erection of firewalls . . .

vermiculite plastered firewalls break up open expanses into easily controlled fire areas

Using high speed methods of application, a mammoth firewall was recently constructed at the Palm-dale, Calif., plant of Northrop Aircraft. Acting on the latest insurance recommendations, this wall



Firewall 75 feet high by 550 feet long getting one inch coating of fire-resisting plaster

was constructed to break up a large open expanse into smaller sections where fires, should they occur, could be more easily controlled. After 4" structural studs were erected, 1" of vermiculite plaster was applied. Specially developed machine pumped plaster upwards through as much as 75' of hose. A finish application of cement was then applied.

(Vermiculite products are produced by the Zonolite Co., Dept. CP, 135 S. LaSalle St., Chicago 3, Ill. . . . or for more information check CP 1768 on handy form, pages 2 and 3.)

Proper maintenance is necessary if floors are to be safe for workers

Providing slip-resistant floors is an important safety measure in any plant, according to the Safety Engineering Dept. of Kemper Insurance. The company has offered some suggestions for providing safe maintenance of the three general types of floor: **wood**—including all kinds of wooden floors; **vitreous**—floors made of cement, magnesite or oxychloride cement, ceramic and faience tile, quarry tile, terrazzo and marble; and **resilient**—asphalt tile, linoleum, linoleum tile, rubber, cork, mastic and vinyl or plastic type.

Their recommendations:

Wood Floors—can be maintained by daily dust mop sweeping and periodic buffing with steel wool.

A billion and then some...



IN recent years, waste of life and property by fire has increased at an enormous rate. It is approaching a billion dollar annual loss in buildings and equipment alone, to say nothing of lost profits as a result of business interruption.

You can stop fire before it starts with **ENGINEERED "Automatic" FIRE PROTECTION**. It's the service that annually saves millions of dollars for businesses whether they ever have a fire or not.



Find out how little it really costs to safeguard life, property and income from fire. Write for the ABC of Fire Protection. It's FREE.

*"Automatic"
Sprinkler*

CORPORATION OF AMERICA

YOUNGSTOWN, OHIO

Offices in principal cities of North and South America

When inquiring check CP 1769 on handy form, pgs. 2-3

CHEMICAL PROCESSING

SAFETY

Ideal material for protection is one that acts as solvent of previous coats, leaving a new finish. Use little or no water to obtain the best possible results.

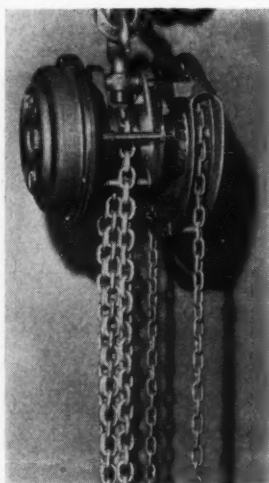
Vitreous Floors—don't seal dense vitreous floors such as quarry and ceramic tile. Mop regularly using good neutral vegetable oil soap. Cement and oxychloride floors often need sealing to keep them from dusting and make them impervious to stains. Type of sealer varies with end use of floor. Manufacturer should be consulted before applying sealer. Although free alkali in cement floors should always be neutralized, never apply acids to other types of vitreous floors.

Resilient Floors — can be kept new-looking and resilient by using only a good neutral cleaner. Use of harsh cleaners will cause hardening or bleeding of color. Never use very hot water or over-flood the floor.

Other factors to check are the clarity of film, ease of application, water resistance, high coefficient of friction and easy removability of whatever dressing is used on the floor.

(Information on the proper maintenance of various types of floors is available through the courtesy of Kemper Insurance, Safety Engineering Department, 4750 Sheridan Road, Chicago 40, Illinois.)

Spark-resistant chain hoist designed for locations subject to fumes



Hoist has a load capacity of one ton

copper-base alloys. Unit has capacity of one ton but is tested at 4000 lb.

(Hoists are manufactured by Ampco Metal, Inc., Department CP, 1745 South 38th Street, Milwaukee 46, Wis. . . . or for more information reader may simply check CP 1771 on the convenient Reader Service slip which is located between pages two and three.)

Uses: For handling materials in hazardous areas where sparks might cause explosion or where corrosion might result from direct contact with liquid or fumes.

Features: Chain hoist is non-magnetic, non-sparking, and is designed to withstand corrosion.

Description: Hoist is spur-gear, ball-bearing type. With exception of few non-metallic parts and ball bearings of Monel, entire unit is constructed with special

Announcing Exceptional Fan Equipment distinguished by:

1. High efficiency characteristic.
2. Rugged, tight construction.
3. Three interchangeable wheels — each with radial blades.
4. Large size range — 11" through 60" inlet diameters.
5. Pressures to 18" SP; volumes to 130,000 CFM.

Inlet adjacent to wheel is shaped to promote efficient, stable performance.

Wheel blades are designed for minimum shock loss.

Heavy steel plate housing features a tight, continuously welded construction at the scroll.

Housing scientifically proportioned to minimize losses and maintain high fan efficiency.

Adjustable to any of eight standard discharges by merely removing top bolts on each side and rotating the housing between the sideplates.

Type XL fans shown here are typical of the smaller sizes which provide universal discharge. Larger sizes are of reinforced sheet steel and base angle construction extending to the foundation line.

Send for Bulletin 702

A new, modern design offering many distinct advantages!

Clarage Type XL industrial fans are particularly well suited for diversified air and material handling applications. You'll profit from the high efficiency, in-the-field adaptability, and numerous other features of this exceptional fan equipment.

Learn more about these distinguishing features by requesting Bulletin 702, or contacting the nearest Clarage application engineering office.

CLARAGE FAN CO., Kalamazoo, Mich.

You can Rely on...
CLARAGE

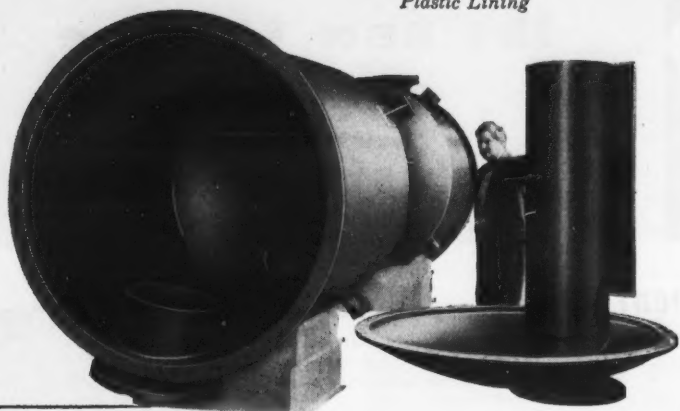


Headquarters for
Air Handling and
Conditioning Equipment

SALES ENGINEERING OFFICES IN ALL PRINCIPAL CITIES • IN CANADA Canada Fans, Ltd. 4285 Richelieu St. Montreal

When inquiring check CP 1772 on handy form, pgs. 2-3

Pulp Tank
prepared for
Plastic Lining



KIRK AND BLUM

offers
specialized experience in
**STAINLESS STEEL
FABRICATION**

Stainless fabrication is distinctively different from conventional steel working. The Kirk & Blum organization has the special knowledge and technique required . . . and the experience and necessary equipment for this highly specialized type of work. With 47 years of experience in sheet metal fabricating, Kirk and Blum offers quality workmanship, economical fabrication to the most exacting specifications . . . in large or small quantities.

Complete facilities to 1/4" capacity for: square or rotary shearing; braking, forming, rolling; punching, riveting, drilling; arc, spot and seam welding; inert gas and submerged arc welding; grinding and finishing. For prompt quotation, send prints and details.

THE KIRK & BLUM MANUFACTURING CO.
3133 FORRER STREET
CINCINNATI 9, OHIO

Literature on request:

"SHEET and PLATE
FABRICATION"

"ELECTRICAL ENCLOSURES"



KIRK AND BLUM

METAL FABRICATION

We Bring Your Prints to Life

When inquiring check CP 1773 on handy form, pgs. 2-3

SAFETY

**Protects eyes from danger
of splashing chemicals
and flying particles**

Uses: Protection from industrial eye hazards such as flying particles, chemical splashes, and light glare.

Features: Four interchangeable lenses are available to suit varying requirements: clear, light, medium, and dark green.



Visor prevents entry of chemical
splashes

Description: Visor goggle assembly consists of opaque green visor, replaceable plastic lens and a headband. It fits all head sizes and does not interfere with wearing of glasses. Visor is either perforated for open ventilation or two-port screened, for indirect ventilation.

(Jones Visor Goggles are a product of the Mine Safety Appliances Co., Dept. CP, 201 N. Braddock Ave., Pittsburgh 8, Pa. . . . or reader may simply check CP 1774, pages 2 and 3.)

**Describes safety valve
for drums**

Single sheet bulletin describes safety valve designed to eliminate dangerous explosions of drums containing flammable liquids. Valve allows air to enter container for contraction and allows pressure to escape during expansion.

Vent-A-Drum bulletin is issued by the Central Safety Equipment Co., Dept. CP, 2201 E. Pa. Specify CP 1775, pgs. 2 & 3.



Drive out
FOUL AIR
Blow in
FRESH AIR
with Coppus Type A
Ventilator

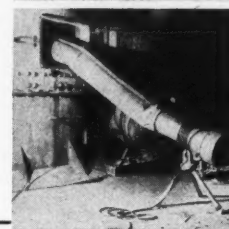
Assure greater safety, comfort for workers . . . get greater efficiency.

Drive out dangerous fumes, gases, stagnant or hot air from boilers, cable manholes, tanks, vats and other confined places. Supply fresh air continuously.

Send now for further information. Coppus Engineering Corporation, 388 Park Avenue, Worcester 2, Mass.

MANHOLES made safe for workers' entrance within minutes.

BOILER AND TANK INTERIORS cooled by Coppus. Fresh air supplied continuously.



When inquiring check CP 1776 on handy form, pgs. 2-3

**FREE! New Safety Information
Process Engineers Need!**



IF YOU BURN oil, gas, powdered coal or other fuel, for power, processing or heating, the chances are 4-out-of-5 that you do not have complete safeguards against burner flame-failure explosions.

Why take chances . . . ? This new booklet gives you all the information you need to prevent

flame-failure explosions. With it you can spot burner explosion hazards in your plant — identify obsolete or inadequate "protective" devices — determine your needs for the most modern safeguard equipment. Get your copy, free! Please give your company name and title.

WRITE:

**COMBUSTION CONTROL
CORPORATION**

Dept. C-6-8, 718 Beacon Street
Boston 15, Mass.



When inquiring check CP 1777 on handy form, pgs. 2-3

CHEMICAL PROCESSING

SAFETY

Electrically-driven hydraulic truck safely handles materials in hazardous areas . . .

equipment designed for use in locations that require Class 1 and 2 labels by UL

Uses: Truck is applicable for broad material handling applications in areas where dangerous fumes or dust prevail.

Features: All models in the 12-model line have Underwriters Laboratories' Class 1, Group D, or



Unit may be used around dangerous solvents or dusts in material handling operations

Class 2, Groups E,F,G atmosphere ratings for motor switches, solenoid housings, tubings, outlets, and fittings.

Description: In addition to explosion-proof switches and contacts, units have spark-proof wheels. Average resistance reading in 5-reading test is 200,000 ohms.

(Explosion-proof lift trucks are a product of Big Joe Manufacturing Co., Dept. CP, 900 W. Jackson Blvd., Chicago, Ill. . . . or for more information reader may simply check CP 1778 on the convenient Reader Service slip located between pages two and three.)

how a dust bowl's manpower problem led to a... NEW CONCEPT OF PRODUCTION FOR BIGGER PROFITS

● No one wanted to work in the "dust bowl" reclaim department of an Eastern plant where graphite and silicon carbide materials are crushed, pulverized, separated and bagged.

Then a Dracco Dust Control System was installed to clear the plant's atmosphere of dust clouds created by crushers, pulverizers, dryers, and other processing units. Result: Dracco meant the end of the manpower procurement problem!

Shortly thereafter, plant management capitalized on the versatility of their Dracco System. They conceived a new technique of integrated production for the recovery of a previously lost valuable by-product. Up to 2,500 pounds of this material is now recovered by the Dracco installation during an eight-hour shift—a profitable dust recovery operation!

Thus, another plant has come to realize increased profits by using peak-performing Dracco equipment.

Whether your problem is collecting valuable dusts or controlling harmful dusts, rely on Dracco for the engineered, profitable solution. Consult a Dracco engineer today . . . there is no obligation.

DRACCO CORPORATION
4070 East 116th Street • Cleveland 5, Ohio



Dracco Bulletin 800 contains complete technical information on "Industrial Dust Control and Recovery". Write for your copy today.



20,000 CFM Dracco Multi-Bag Dust Filter controls nuisance dusts and recovers up to 2,500 pounds of a valuable graphite by-product during an eight-hour shift.

DRACCO *Performance Proved*
Airstream **CONVEYORS • DUST CONTROL EQUIPMENT**

When inquiring check CP 1779 on handy form, pgs. 2-3



Case No. 207: Handling sharp edged metal products in hot acid solutions. Correctly job-fitted gloves reduced hand injuries 78% and saved 6¢ per man-hour on glove replacement cost.

We fit the glove to the job...

Savings of 40% to 70% of glove costs to employees or management, and comparable reductions in hand injuries, are being effected by replacing old-type work gloves with Edmont coated gloves designed for the job condition. With the cooperation of America's largest industries we have developed and test-rated gloves for any combination of service requirements listed below. Tell us your operation. Without cost we will send test samples of the correct glove and name of distributor who can supply you.

Edmont Case No. 208: Handling explosives in fibre cases. Job-fitted gloves, palm-coated with rough textured natural rubber, outwore leather palm gloves 3 to 1 and gave positive non-slip grip at all times.

Edmont Case No. 419: Chemical company working in acids and strong solvents. Job-fitted gloves coated with NEOX (specially reinforced neoprene) outwore rubber coated gloves more than 4 to 1.

Edmont Case No. 272: Handling thin strips of stainless steel. Job-fitted gloves, palm-coated with cut-resistant reinforced neoprene, wore 8 times longer than canvas gloves (224 hours vs. 28 hours) with comparably greater protection.



Rough-Finish Natural Rubber Coated

We make 34 types of coated industrial gloves. Complete catalog on request. Address Edmont Manufacturing Co., 1204 Walnut Street, Coshocton, Ohio.

Edmont job-fitted gloves
Largest selling line. Supplied by leading industrial distributors



SAFETY

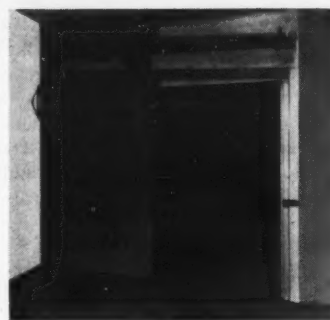
Automatic door operator tends fire doors...

puts normally idle doors to work

Uses: To provide automatic door operation in doorways equipped with fire doors.

Features: Device allows doors to remain closed at all times other than when in actual use.

Description: Electric operator is intended for use with standard



Cuts fire risk

inclined track fire doors in widths up to 8 ft. Fusible link disconnect device disengages operator from door in case of fire. Control of operator can be accomplished by means of approach pull cord, push button, floor plate or photoelectric cell.

(Fire door is produced by Clark Door Co., Inc., Dept. CP, 183 Rose St., Newark 8, N.J. . . or for more information check CP 1781 on handy form, pgs. 2 & 3.)

Describes safety devices for boilers

Illustrated 24-page catalog on boiler water level controls and safety devices is designed especially to aid engineers, heating men and designers. Publication contains engineering information, including capacity curves and roughing-in dimensions. Parallel data on different models is arranged in tabular form for ready comparison.

Bul SC-5 is available from McDonnell & Miller, Inc., Dept. CP, 3500 N. Spaulding Ave., Chicago 18, Ill. When inquiring specify CP 1782, pgs. 2 & 3.

make Perchloric Acid handling safer!

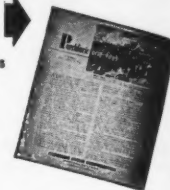
Precautions that must be taken in handling perchloric acid make special hoods a necessity. Now Alberene Stone offers you fume hoods specially designed to reduce hazards in working with perchloric acid . . . specially designed to give you greater safety. For prompt advice on any of your fume problems write Alberene Stone Corporation of Virginia, 419 4th Ave., N. Y. 16, N. Y., or visit our nearest branch office.

When inquiring check CP 1783 on handy form, pgs. 2-3

Alberene Perchloric Hoods in Research Laboratory, International Nickel Company, Inc., Bayonne, New Jersey

FREE REPRINTS

of an article giving helpful hints on safe handling of perchloric acid are yours for the asking. Just write today on your company letterhead.



ALBERENE STONE

Branches in Principal Cities

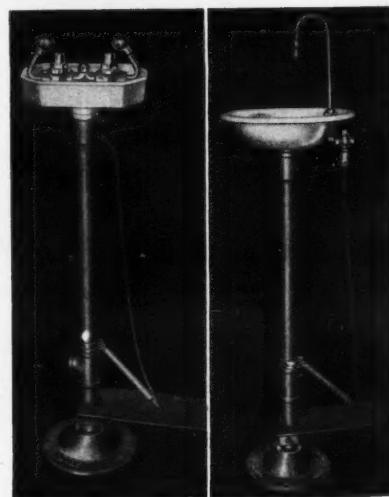
TAKE EVERY PRECAUTION...

TO SAVE PRICELESS VISION!

The HAWS Eye-Wash Fountain makes it possible for the worker himself to safely, easily wash injurious chemicals and foreign matter from the eyes before medical aid can be at hand. Has the potentiality of saving vision, reducing insurance claims.



AND to prevent dangerous and expensive eye accidents, encourage workers to wear goggles and plastic face shields by installing a HAWS Goggle-Wash Fountain—eliminates one of workers' main objections to wearing these safety devices.



"Precaution" is really the cheapest thing you can buy!

HAWS Safety Equipment costs only a few cents per worker. Write for literature today!

HAWS

DRINKING FAUCET CO.

1445 FOURTH STREET (Since 1909) BERKELEY 10, CALIFORNIA

When inquiring check CP 1784 on handy form, pgs. 2-3

CHEMICAL PROCESSING

When inquiring check CP 1780 on handy form, pgs. 2-3

SAFETY

Portable floodlight can be used in hazardous areas . . .

approved by Underwriters' Lab for all chemical plant applications

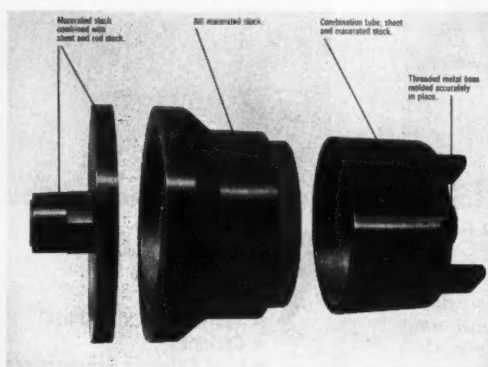


Approved for all locations

Explosion-proof portable floodlight is intended for use in areas such as arsenals, painting areas, chemical plants, oil refineries, and tankers. It has been approved by Under-

writers' Laboratories Inc. for use in all hazardous locations . . . and is at present the only one permitted for use in hydrogen, acetylene and manufactured gas areas.

Interior air pressure greater than surrounding atmosphere prevents entrance of any gas. Full air and water integrity is maintained until lamp is changed at end of 4000 hr. If unit is damaged, micro switch automatically extinguishes lamp at three psi.



Formica plastic components of lamp are molded, then machined to shape

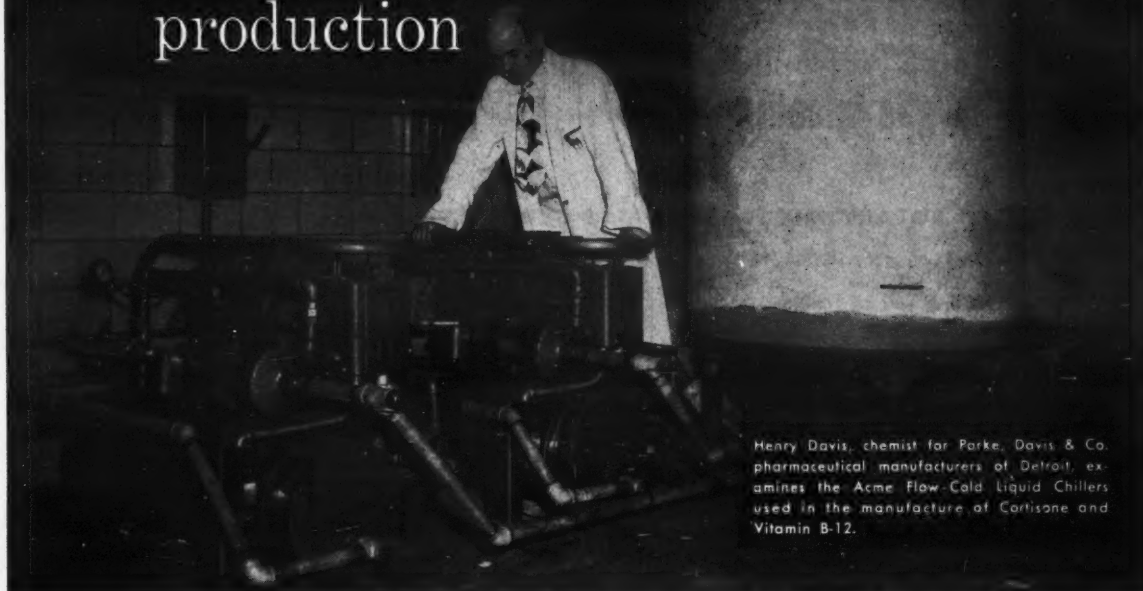
Problem of maintaining air and water integrity was solved by using special plastic that is first molded, then machined to extremely close tolerances. Formica plastic used had great tensile strength and heat resistance up to 250°F. It is also reported to have good corrosion and weather resistance.

(Floodlight is manufactured by Safe Lighting Inc., Dept. CP, 91-03 Astoria Blvd., Jackson Heights, N.Y. . . . or for more information check CP 1785 on handy form, pages 2 and 3.)

Have a safety problem . . . ?

the handy Product Directory (pages 198 to 201 in this issue) is your guide to processes, equipment, ideas which may suit your needs.

Why did Parke, Davis specify *FLOW COLD*® for "wonder drug" production



Henry Davis, chemist for Parke, Davis & Co. pharmaceutical manufacturers of Detroit, examines the Acme Flow-Cold liquid chillers used in the manufacture of Cortisone and Vitamin B-12.

Acme's packaged liquid chillers provide efficient operation with lower installation and maintenance costs

Throughout the manufacturing process of the new "wonder drugs" — cortisone, eschatin, and Vitamin B-12 — modern industrial refrigeration plays an important role. At one phase two Acme Flow-Cold Packaged Liquid Chillers (3 h.p. capacity) hold 15 gallons of alcohol per minute at a constant 35 degree Fahrenheit temperature. Later in the process another Acme Flow-Cold maintains an ethylene glycol solution at a minus 10 degrees Fahrenheit.

Parke-Davis selected Acme Flow-Cold Chillers be-

cause of the time and money that could be saved in building the system. Each Acme Flow-Cold is shipped from the factory completely assembled and pre-tested. Installation of a complete chilling system is accomplished in a matter of hours. These installations were so successful Parke-Davis re-ordered more Flow-Cold units to control the temperatures of other chemical processes.

Write today for catalog FC1-CP.



ACME INDUSTRIES, INC.

Mfgs. of a complete line of Air Conditioning and Refrigeration Equipment

JACKSON, MICHIGAN



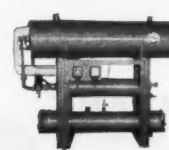
Evaporative Condensers
Cooling Towers
Floor-type Unit Coolers



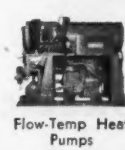
Direct Expansion (Dry-Ex) and Flooded Liquid Chillers
Heat Exchangers, Oil Separators



Shell and Tube, Shell and Coil Condensers
Receivers, Pipe Coils



* Packaged Liquid Chillers to 225 tons



Flow-Temp Heat Pumps
Flow-Cold Liquid Chillers



Remote Room Conditioner

Continuously serving the air conditioning and refrigeration industry since 1919

When inquiring check CP 1786 on handy form, pgs. 2-3

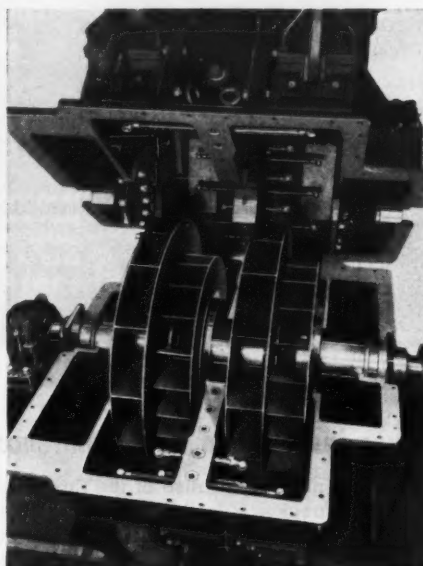
HOW THIS COMPACT CYCLONIC WET SCRUBBING CHAMBER

handles your most exacting
gas cleaning jobs

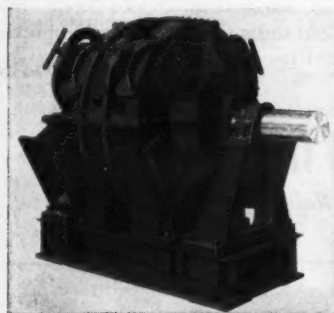
"BUFFALO" ROTARY MULTI-STAGE GAS SCRUBBER

In the photo at right of a "Buffalo" Rotary Multi-Stage Gas Scrubber with upper casing lifted, you see a cyclonic gas scrubbing chamber which is ideal for removing easily wetted or slightly water-soluble dust particles. Where tar vapor, lampblack or metallic fumes are present to the extent of 5 to 10 grains per cu. ft. of gas, cleaning effects down to .006 grains per cu. ft. are being averaged in use.

Gas with its dust content is sprayed as it enters one side of the wheel. Wet scrubbing action takes place as the wheel revolves. Cleaned gas is discharged from the "inlet" of the other wheel. This "Buffalo" Scrubber is the only small-space unit to handle many of today's requirements for low but toxic initial loadings. Since every job must be analyzed separately, you are urged to write our Engineering Dept. concerning your own specific air or gas cleaning problem. Their long experience is at your disposal.



**FOR REMOVING TAR VAPOR—
LAMPBLACK—METALLIC FUME—**
"Buffalo" Rotary Multi-Stage Gas Scrubbers have proven the ideal answer to low-volume requirements in the metallurgical and processing industries. Write for Bulletin AP-425 for details on these extremely sturdy units for high cleaning efficiency.



BUFFALO FORGE COMPANY

524 BROADWAY BUFFALO, N. Y.

Publishers of "Fan Engineering" Handbook
Canadian Blower & Forge Co., Ltd., Kitchener, Ont.
Sales Representatives in all Principal Cities



VENTILATING AIR CLEANING AIR TEMPERING INDUCED DRAFT EXHAUSTING
FORCED DRAFT COOLING HEATING PRESSURE BLOWING

When inquiring check CP 1787 on handy form, pgs. 2-3

SAFETY

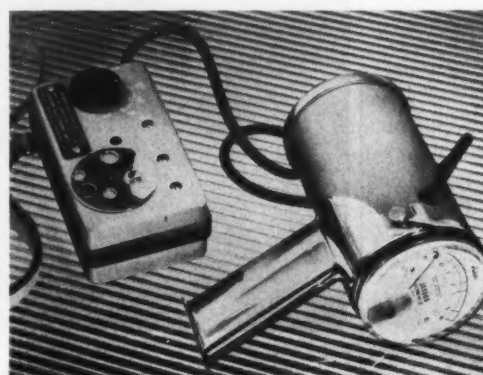
**Highly sensitive instrument detects
when radioactive material
is danger hazard**

Uses: For safeguarding doctors, scientists and technicians working with X-ray, industrial radiography, and radioisotopes.

Features: Range of instrument from highest to lowest reading, is on the order of one billion to one.

Description: Highly sensitive ionization type beta-gamma survey instrument will detect increments in radiation as small as .002 mr/hr above background. Logarithmic response permits reading from .01 to 10,000 mr/hr in only three ranges.

Accuracy is better than 10% of reading at all levels. Light weight probe comprises only the ion



Detects increments in radiation as small as .002 mr/hr above background

chamber and meter. Control unit contains printed circuits, mercury batteries for 350 hr continuous use, as well as a calibration check source of less than 1 uc. that is used for all ranges.

(Model AGB-10-SR counter is available from Jordan Electronic Mfg. Co., Inc., Dept. CP, 119 East Union St., Pasadena 1, Calif. . . . or for more information reader may simply check CP 1788 on the convenient Reader Service slip which is located between pages 2 and 3.)

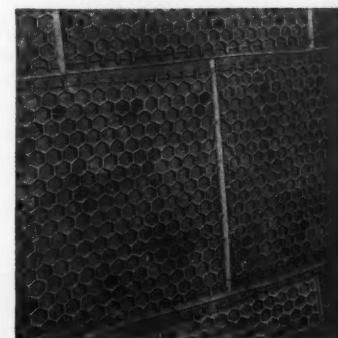
Gives details of techniques in fighting fires

Short booklet defines and illustrates attack strategy used in fighting fires. Fast, mobile, aggressive action operating directly on the fire at close range is main method outlined. Some phases of fire-fighting covered are use of multiple 1½" pre-connected lines, fog, and wet water, in addition to breathing apparatus.

"The Strategy of Attack" is issued by the International Assoc. of Fire Chiefs, Dept. CP, 22 East 38th St., New York 16, N. Y. . . . when inquiring specify CP 1789 on handy form, pages 2 and 3.

RIGHT WHERE IT COUNTS! IRVING "GRIDSTEEL" CONTOUR RETAINER MESH

Used with
Castable Ganister Linings
in Refracting Units
in Petroleum
& Chemical Industries



RIGHT for

- ★ Thermal Cracking Units
- ★ Cyclones
- ★ Fluid Catalytic Regenerators
- ★ Fluid Catalytic Reactors
- ★ Hydroformers & Reactors
- ★ Flue-Gas Stacks & Ducts
- ★ Catalyst-Carrying Pipe Lines

REDUCE EXPENSIVE SHUTDOWNS

by using
Irving "GRIDSTEEL",
the quality contour retainer mesh.

**IRVING SUBWAY
GRATING CO., INC.**

ESTABLISHED 1902

OFFICES and PLANTS at

5050 27th St., Long Island City 1, N. Y.
1850 10th St., Oakland 20, California

When inquiring check CP 1790
on handy form, pgs. 2-3

CHEMICAL PROCESSING

**Highly maneuverable fire truck
moves through narrow aisles
at 15 mph . . .**

provides valuable supplement to inadequate or malfunctioning permanent equipment

Cost of installing and maintaining a 100% automatic fire fighting system is, in some cases, too prohibitive to consider. A compact, highly maneuverable fire truck has been developed to supplement permanent fire protection systems.



In-plant fire fighter carries one or two-man crew

Truck carries one or two men and travels through narrow aisles and standard doors at 15 mph.

It can be equipped to carry complete high pressure fog systems, 210 gal of water, 100 ft of booster hose, rotary pump, foam concentrate as well as fire axes, crow bars, first aid kits and ladders.

(Trucks are manufactured by the Kalamazoo Mfg. Co., Dept. CP, 1827 Reed St., Kalamazoo, Mich. . . or for more information check CP 1791 on handy form, pages 2 and 3.)

**Tested at 275°F for 90 days,
electrical insulation laminate
stays self-extinguishing**

Uses: For insulation of electrical equipment where high heat resistance and self-extinguishing properties are needed.

Features: Laminate has good arc resistance, low water absorption, high dielectric strength, a low dielectric constant, high surface and volume resistivity, high insulation resistance, and low loss and dissipation factors.

Description: Known as Repco GOC Grade, laminate was produced with American Cyanamid Co's polyester resin Laminac 4146 and reinforced with Owens-Corning Fiberglas Mat. Sheet can be readily punched and machined and is available in a variety of thicknesses and sizes.

(Repco GOC Grade Laminate is manufactured by Russell Reinforced Plastics Corp., Dept. CP, Lindenhurst, N.Y. . . or for more information reader may simply check CP 1792 on handy form, pages two and three.)

Four reasons why Ansul fire protection equipment is faster —more effective!

1.		WEATHER-TIGHT CONSTRUCTION. Ansul extinguishers are water-tight and corrosion resistant, always ready for action even after extreme weathering and exposure to wide temperature variations.
2.		PATENTED NOZZLE. To ensure full fire coverage, Ansul's patented nozzles deliver the right kind of stream for your fire protection problem (low velocity or high velocity, depending on hazard).
3.		SEALED PRESSURE CARTRIDGE. A positive activating system puts Ansul "Plus Fifty" dry chemical to work immediately—no delay. Cartridge replacement in the field is simple, no tools are necessary.
4.		RUGGED CONSTRUCTION. Quality materials and careful workmanship make it possible for Ansul to back their equipment with a 5-year warranty —the only one of its kind in the industry.

**Here is the Big Service Plus
offered only by Ansul:**

A complete fire protection program for your plant and your employees

- Personnel training in your plant by experienced Ansul instructors.
- Customer training school at Ansul plant, Marinette, Wisconsin. Write for schedule and registration information.
- Visual aids for your safety meetings and other training.
- In-plant survey to determine your fire protection needs.

Call the Ansul Man!

Get in touch with your local Ansul man through the "yellow pages" or write ANSUL CHEMICAL COMPANY, Fire Equipment Division, Department F-122, Marinette, Wisconsin.



When inquiring check CP 1793 on handy form, pgs. 2-3

*These tough twins
protect your
hard-to-pack
products!*



Bemis Waterproof LAMINATED-TEXTILE Bags

These are the bags you need for the greatest protection at economical costs . . . *the strongest shipping bags made*. They are 3- or 5-layer construction, with crinkled paper or plastic linings laminated to cotton or burlap.

Bemis Flexibly Bags

If you require a little less than the super-protection of Bemis Waterproof Bags, these laminated, all-crinkled-paper bags are your best bet. Bemis Flexibly Bags are tough—all plies are crinkled to give stretch and flexibility.

Ask your Bemis Man to help you determine which is the practical, economical shipping bag for you. Remember—with either Bemis Waterproof or Bemis Flexibly, you get the benefits of Bemis crisp, bright multi-color printing . . . and Bemis multi-plant service.

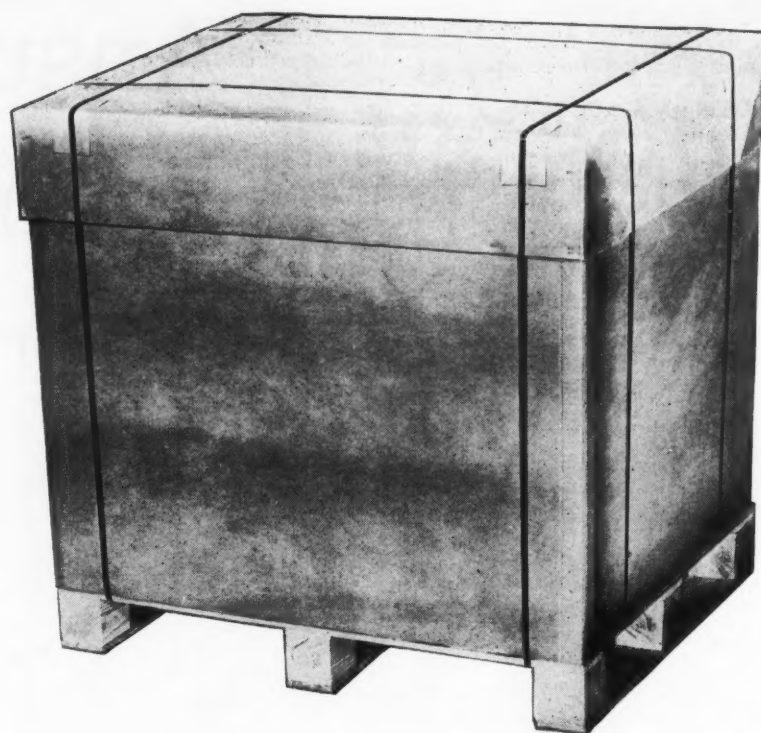
Bemis



408 Pine St., Box 92
St. Louis 2, Mo.

When inquiring check CP 1794 on handy form, pgs. 2-3

packaging



This container, now used by Dow . . .

***handles 1000 pounds,
replaces five drums***

Savings in initial package cost, storage, and materials handling are realized

Problem: Dow Chemical Company, Midland, Michigan, sought economies in initial package costs, storage, and materials handling not offered by laminated fiberboard drums of 200 lb capacity in use of storing and shipping its Styron plastic pellets. They were also interested in utilizing a container which would give protection against the sifting of the fine-grained pellets and would have structural characteristics adequate to handle the bulk load in rail shipment.

Solution: Recently, Dow has standardized shipments of Styron pellets in a corrugated container measuring 41 1/4 x 32 3/4 x 33".

Container has four parts: inner body, bottom lid into which inner body slips, outer body which telescopes over bottom lid and inner body, and top lid which fits over outer body.

Both inner and outer bodies are made of 700-lb test, double-wall board taped with three-inch, super-heavy, clay-filled cloth tape. Both lids are made of scuff-resistant 500-lb test, single-wall board. Lids are cut, scored, and pre-stitched so that they may be shipped flat, ready for immediate assembly. When box is filled and capped, it is steel strapped in two directions to an expendable wood skid.

Results: Dow has found container successful in use. This unitized package handles 1000 lb in a single operation with less effort than is involved in using separate drums and palletizing them after filling. The box itself is much more economical than the five drums it replaces.

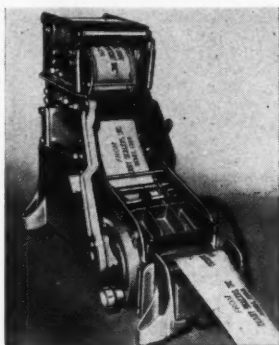
Space is saved because box lids and bodies are received "knocked down." After the rectangular corrugated containers are filled, one-third more can be stored on the same floor area than was possible with drums. Change in shape and size of container has substantially reduced number that are required to pack a given amount of material.

(Container is a product of Gaylord Container Corp., Dept. CP, 111 N. Fourth St., St. Louis 2, Mo. . . or for more information check CP 1795 on handy form, pages 2 and 3.)

**Marks code, date, shift, plant
or operator on tape . . .**

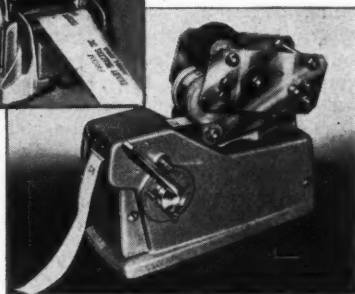
gummed tape becomes carrier of identification to aid warehousing

Illustrations show two code information printing attachments for tape dispensing machines, one for a machine with lever dispenser and the other for machine with pull dispensing. Printer can be easily changed to provide desired markings and



Coder for pull type
tape dispenser

Coder for lever dispens-
ing tape



speeds up process of identifying taped packages in warehouses. It is not recommended for replacing printed advertising on cartons.

(Kiwi Tape Marking Attachments are manufactured by Kiwi Coders Corporation, Dept. CP, 3804 North Clark St., Chicago 13, Illinois . . . for additional information reader may simply check CP 1796 on the convenient Reader Service slip which is located between pages 2 and 3.)

**TAILOR-MADE
PACKAGE SERVICE**

Just 28 words

to tell our steel container story

Colorfully lithographed, Continental steel containers become an integral part of your package family. When emptied and put to other uses, they continue to sell your name and product.



**CONTINENTAL
CAN COMPANY**

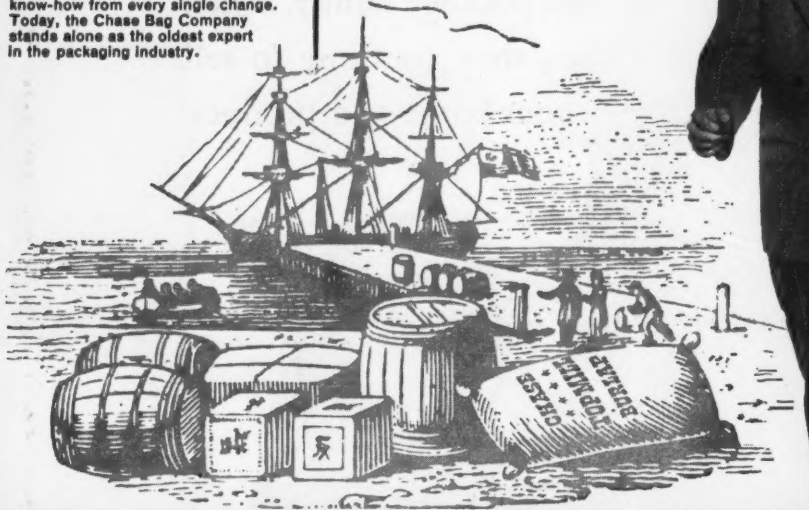
Eastern Division: 100 E. 42nd St., New York 17
Central Division: 135 So. La Salle St., Chicago 3
Pacific Division: Russ Building, San Francisco 4

When inquiring check CP 1797 on handy form, pgs. 2-3

"C"-man...

RELY ON THE

* From windjammer to atom age . . . the Chase Bag Company has experienced countless revolutions in technocracy during 107 years. And the Company has gained a wealth of experience and know-how from every single change. Today, the Chase Bag Company stands alone as the oldest expert in the packaging industry.



Backed by 107 years of packaging experience

Chase Bag experience costs you nothing, yet it's apparent in the recommendations of every "C"-Man.

It's apparent in every Chase Bag product, too . . . the 107 years' insistence on quality—a striving for

maximum product protection and package appeal.

You cannot put your packaging problems in more capable hands. You cannot put your product in better bags. *Contact your "C"-Man today!*

Low Cost Protection For Your Product

The modern low-cost way to protect your product is to package it in Chase MULTIWALL Bags. It's the economical package with all these features:

- Fine appearance
- Clean, colorful printing
- Dependable product protection
- More sales appeal
- Easy to stack and store
- Wide selection of sizes, types

Available from 2 to 6 plies—Sewn Valve, Sewn Open Mouth, Pasted Valve, Pasted Open Mouth.

For Samples and current prices, write Department 20-H



CHASE BAG COMPANY General Sales Offices: 309 W. Jackson Blvd., Chicago 6, Ill.
30 BRANCHES AND SALES OFFICES—STRATEGICALLY LOCATED

When inquiring check CP 1798 on handy form, pgs. 2-3

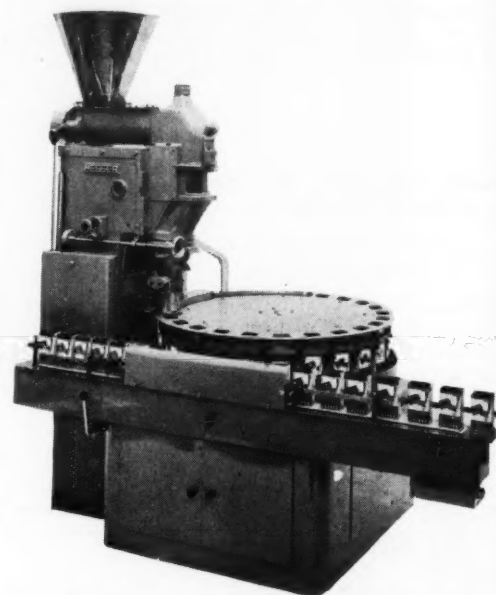
PACKAGING

Packs hygroscopic powders in quantities to 2 lb, rates to 70/min . . .

auger does filling; hydraulic vibrating mechanism settles materials

Uses: Filling hygroscopic and fatty non-free flowing powder materials.

Features: Hydraulic vibrating mechanism settles materials as they are filled. A specially designed auger, readily accessible for cleaning, does the filling at rates from 50 to 70 containers/min. Weight tolerances are maintained to $\pm 1/4\%$.



Filling unit occupies floor space of only 20 sq ft

Description: Dustless operation of automatic filling machine is assured through use of a simply constructed exhaust duct assembly. Entire unit occupies a floor space of only 20 sq ft. Power required is $2\frac{1}{2}$ to 3 hp. Machine is capable of packaging hygroscopic and fatty powders in quantities from 4 oz to 2 lb, with a half hour change-over from one size to another.

(Filling machine, manufactured in Germany by Fr. Hesser A.G. of Stuttgart, is distributed in this country by Geveke & Co., Inc., Dept. CP, 25 Broadway, New York 25, N.Y. . . . or for more information check CP 1799 on handy form, pages 2 & 3.)

Looking for more packaging ideas?

The handy Product Directory on pages 198 to 201 is your guide. Products and processes are listed there.

Many petroleum products filled by same machine

Automatic and semi-automatic liquid filling machines for petroleum products are described and illustrated in four-page bulletin. Of particular interest is the filling valve on these units. Sleeve construction of valve makes possible filling of oils, anti-freeze, and many other petroleum products on same machine. Photos are of installations of units discussed.

Bul 152 is issued by Horix Mfg. Co., Dept. CP, Corliss Station, Pittsburgh 4, Pa. When inquiring specify CP 1800 on handy form, pages 2 and 3.

Up to 10,000 impressions per day made by automatic, hand-fed printing machine...

sensitive trigger trips at touch of object to be printed — tags, labels, or forms

Uses: Automatic imprinting of tags, labels, or forms.

Features: Hand-fed machine is operated automatically. A sensitive trigger trips at touch of object to be printed. Unit will print as fast as tags or labels can be fed into it. As many as 10,000 impressions per day have been reported.

Description: Called the Jiffy Print, machine uses fastest method of setting individual type. Lead type slides quickly from small rack which holds 42 rows of separate characters. Operator never touches type. An easy-to-handle typefork picks out type from above a clearly-printed index. Reading characters backwards is not necessary.

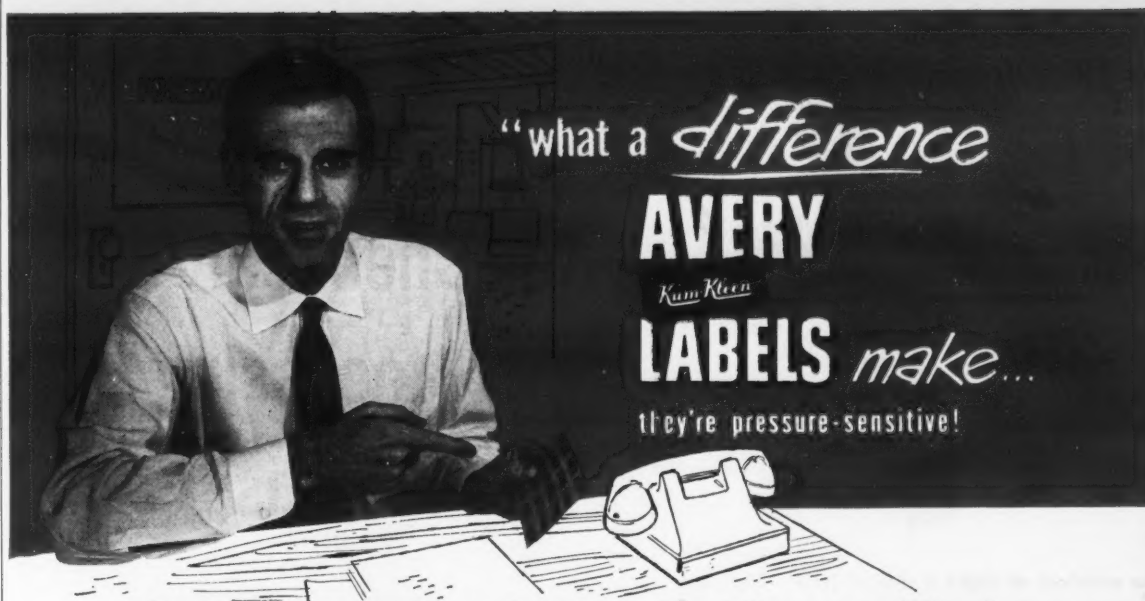
From typefork, type slides smoothly into printing head. An average amount of copy can be set in two minutes. Copy changes are rapid. Complete line slugs, economical and made to order, can speed copysetting even more.

Printing is through a ribbon that advances with each impression. It automatically reverses itself when end is reached. Ribbon is quickly changed and comes in various colors or a two-color combination.

Over 200 separate characters on eleven separate lines can be imprinted with a single impression. Type is available in several sizes and styles. Trade-marks, signatures, and special cuts can be reproduced. When copy or elements of it are repeated often, slugs can be cast and used over again.

Numbering wheels can be added and an automatic counter is available to record exact number of impressions. For positioning of copy a side guide attaches to machine. With this attachment, both front and right side are open for feeding tags.

(Printing machine is a product of Dept. JP, American Tag Co., Dept. CP, 151 Cortlandt St., Belleville 9, N.J. . . . or for more information reader may simply check CP 1801 on handy form, pages 2 and 3.)



"what a *difference*

AVERY

Kum-Kleen

LABELS *make...*

they're pressure-sensitive!

*they sure speed production...there's no moistening
—no waste motion!"*

Consider these practical labeling advantages!

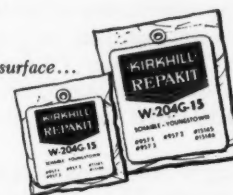
■ *All waste motions are eliminated—for unlike ordinary labels, Avery Pressure-Sensitive Labels are applied dry! An automatic dispenser pops them out—the operator simply lays the label in place on the product or package—without moistening. That's all there is to it!*

■ *Production line speed—Avery dispensers speed every type of labeling job—whether it's a single item or a thousand. Labels are fed, one-at-a-time, ready for instant application. There's no sorting of loose labels...no messy glueing or licking...no soiled, spoiled packages.*

■ *They stick, and stay stuck—Avery Kum-Kleen Labels stick to any clean, smooth surface—right now—and will not curl, peel or pop off! That's why Avery Kum-Kleen Pressure-Sensitive Labeling is different...it's practical and economical. Write now for details—free sample labels—case histories!*

**SPECIFICALLY
SPEAKING...**

*how to handle
a hard-to-label surface...*



Kirkhill, Inc., selected a transparent, Polyethylene bag to give extra sales appeal to their line of faucet repair kits. These kits each contain some 30 different items for repairing almost any conceivable type of swing spout faucet, and this plastic bag made an ideal display and a perfect package.

But how to identify it...how best to show off the Kirkhill brand? Avery Pressure-Sensitive Labels, of course! These attractive labels stick instantly to the flexible plastic surface—without drying out or popping off! They stick—and stay stuck...they identify both the product and the manufacturer. Where can you use quick, clean Avery Labeling in your business?



AVERY ADHESIVE LABEL CORP., Custom Div. 123

117 Liberty Street, New York 6 • 608 S. Dearborn Street, Chicago 5
1616 S. California Ave., Monrovia, Calif. • Offices in other principal cities

☐ Please send case histories
and free samples

☐ Have the Avery Label
man call

Name _____

Company _____

Address _____

Our Business Is _____

When inquiring check CP 1802 on handy form, pgs. 2-3



for Chemical Processing Advertisers*

The emblem at right is that of NBP—National Business Publications. You've probably seen it before on our contents page . . . rate card . . . or heading the **CHEMICAL PROCESSING** listing in *Standard Rate & Data*. Because we're proud of it.

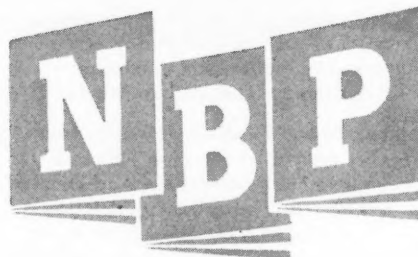
It signifies that **CHEMICAL PROCESSING** has qualified for membership in the largest association of technical, scientific and professional journals in the United States. (We're proud, too, that our C.P. executive staff includes a past president of NBP and a member of its Board of Directors.)

But belonging to NBP is more than a feather in our publishing cap. It's an important *plus* for every advertiser in **CHEMICAL PROCESSING**. Here are the membership requirements. Judge for yourself:

- Unbiased editorial content
- Periodic reader interest evaluation
- Non acceptance of questionable advertising
- Periodic audit of circulation
- Uniform rates to all advertisers

In addition, NBP provides the framework for a continuing exchange of ideas among member publishers. The result: continuing improvement in publishing practices to make **CHEMICAL PROCESSING** more useful to its readers . . . more productive for its advertisers.

★ Courtesy of the publication *MEDICAL ECONOMICS*, creator of this copy, here adapted to **CHEMICAL PROCESSING**.



Chemical Processing

For men who manage
the Chemical Processing Industries

Published by Putman Publishing Company

Creators of **PUTMAN-STYLE** Magazines
terse, vital editorial; "hand-picked" circulation;
square, high-visibility format; quality readership;
hence more **READER ACTION**



PACKAGING

Closes both ends of carton — simultaneously

Details, specifications, and illustrations of company's stapling machines are presented in eight-page bulletin. Machines handle simultaneous closing of both ends of full-overlap and telescope cartons, either corrugated or fiberboard. One page is devoted to company's Retractable Anvil stapling head with adjustment for concealed clinching.

Bul P/401 is available from International Staple & Machine Co., Dept. CP, 801 Herrin St., Herrin, Ill. Specify CP 1803 on pages 2 and 3.

Savings result from better protection and faster assembly of goods in water-proof bale cup . . .

packages can be printed with label or trademark in two-color design

Uses: Designed for long-distance shipping of textile and other baled merchandise.

Features: Savings result from faster assembly, packing of more material per shipment, better protection in transit which permits lower insurance rates, and other important factors. For better product identification, company will print orders with customer's label or trademark in two-color design.

Description: Goods are securely packed in lower portion of waterproof, pilfer-proof bale cup, and slightly larger top section telescopes over bottom to form a double protective wall.



Bale cup is waterproof, pilfer-proof

Telescoping bale cups are made of quality burlap and crinkled paper. A variety of adhesives are available to meet customer requirements. Cups arrive flat, to conserve storage space, and low temperature adhesives permit quick opening. Finished bales are compact, easy to store and handle, neat in appearance. Bale cups are especially de-

signed for use in baling presses, but are equally suitable for use without a baler.

Bale when packed has no haphazard closure or exposed openings to cause loss or damage to contents, or to encourage theft. "Skirts" of bale cups are furnished in various standard depths to permit packing different sizes of goods, or company will manufacture cups to individual specifications.

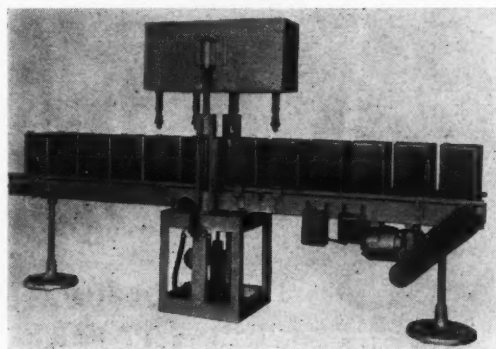
(Telescoping bale cup is a product of Chase Bag Company, Dept. CP, 309 W. Jackson Blvd., Chicago 6, Ill. . . . or for more information check CP 1804 on the convenient Reader Service slip located between pages 2 and 3.)

**No drip means clean cans
as semi-automatic unit
fills 6 to 8/min . . .**

electric fill-timer lets operator know when fill of 1 to 5-gal containers is complete

Uses: Filling petroleum products, edible oils, and other liquids and semi-liquids packed in large containers, from one to five gallons.

Features: Cans being filled are kept clean — nozzles don't drip after shut-off. Machine handles containers at speeds from 6 to 8/min — no container, no fill. Filling height is accurate. Electric fill-timer can be attached to notify operator when fill is complete.



Unit has no-container, no-fill feature

Description: This semi-automatic, pneumatically-operated four-valve gravity filler, Model LG-4, has a tank of steel or stainless steel specifications. Filling valves are in sizes to suit container, bronze or stainless steel. Tank lifter mechanism is operated from compressed air line. Pressure required is 80 to 90 psi.

Conveyor is standard 15' overall, 7½" wide steel conveyor chain. Geared-head motor drive is included. Motor is explosion-proof, 220/440v, three-phase, 60 cy.

(Filling machine is a product of Horix Mfg. Co., Dept. CP, Corliss Station, Pittsburgh 4, Pa. . . . or for more information check CP 1805 on handy form, pages 2 and 3.)



A PRETTY GOOD THEME SONG for the buyer of Multiwall Shipping Sacks.

He wants strong, sturdy sacks at the lowest cost consistent with full protection of his product from packing room to purchaser.

And he wants those sacks at the time specified.

Raymond has been producing Multiwalls long enough to know that the continued good will of the customer depends on a strict adherence to these requirements.

For painstaking cooperation in supplying Multiwalls adapted to your special needs, for *kept promises of delivery* and for clean, sharp, colorful printing, call in the Raymond man. THE RAYMOND BAG COMPANY, Middletown, Ohio. Phone 2-5461.

Raymond
MULTIWALL PAPER
SHIPPING SACKS

When inquiring check CP 1806 on handy form, pgs. 2-3

Match THAYER SCALES against your toughest bagging or batchweighing problems

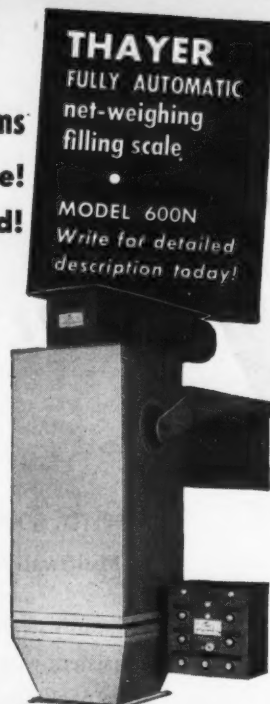
Speed · up to 12 bags per minute!
Accuracy · to within 1/10 pound!

Whether batchweighing for formulations or bagging for shipment, you can speed filling and weighing operations — and get greater accuracy too — with a Thayer Fully-Automatic Net-Weighing Scale. Dry chemicals, plastics, etc. in powder, granulated or pellet form are readily handled by a unique feeding system that closely controls amount and rate of flow. Any free-flowing or flooding material may be handled with accuracy and speed. The entire weighing and discharging operation is *completely automatic*.

Thayer Net-Weighing Scales handle charges from 1 to 500 pounds. Exclusive shockproof leverage system — without wear-vulnerable knife-edge pivots — guarantees continued accuracy. Hopper and feeding system are stainless steel for maximum protection against corrosion and contamination.

Thayer Gross-Weighing Scales are also available for filling directly into bags, drums and cartons.

Checkweighing Problems? . . . write for information on Thayer Checkweight Scales which automatically indicate weight of filled container and then separate off-weight units from properly filled packages! Types available for packages weighing from 1 to 200 pounds at rates up to 40 packages per minute. Latest Model 1005 automatically checkweighs bags and cartons before they are closed!



THAYER SCALE AND ENGINEERING CORPORATION

492 EAST WATER STREET, ROCKLAND, MASS.

Where weight is worth money . . . it pays to be sure!

When inquiring check CP 1807 on handy form, pgs. 2-3



You can't argue with experience, for over 100 years Harrisburg Steel has been producing high quality steel products . . . so it is only natural they manufacture the best cylinders.

Harrisburg's seamless steel cylinders for high pressure gases range in capacities from 14 to 400 cubic feet . . . in both Domestic and Export types . . . to I.C.C. specifications. Harrisburg also offers technical service to solve any problems you have regarding cylinders . . . just contact our Sales Engineer.

Write today for our Catalog and prices.

HSC-CC-3/54

101 YEARS IN  PENNSYLVANIA'S CAPITAL

Harrisburg Steel
CORPORATION

HARRISBURG 24, PENNSYLVANIA

When inquiring check CP 1808 on handy form, pgs. 2-3

PACKAGING

Easy drum opening promoted by tool

Manufacturer has announced availability of a simple tool to make opening and closing of fiber drums quick and easy. Tool can be used on any of manufacturer's Leverpak drums from 12 to 75 gal sizes.

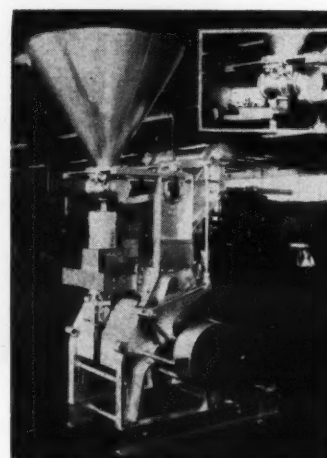
(Fiber drum opening tool is a product of Continental Can Co. Inc., Dept. CP, 100 E. 42nd St., New York 17, N. Y. . . . or for more information check CP 1809 on handy form pages 2 and 3.)

Eliminates air pockets in filling of heavy products . . .

rising table allows filling from bottom up

Uses: Heavy-duty unit was designed particularly to fill all size tubes, cans, and glass with such heavy products as glazing putty, caulking compounds, mayonnaise, and so forth.

Features: Filler has an automatic rising table that can be adjusted for different size containers, thus permitting filling bottom up, eliminating air pockets.



Will fill gallon can with only one stroke of plunger

Description: Heavy-duty semi-automatic filling machine is constructed of bronze and steel, though contact parts can be made of stainless steel to provide longer life and corrosion resistance. Change over to different size containers and

New electronic device controls batch weighing automatically, remotely



A leading rubber producer controls latex batch weighing automatically, remotely and economically with Baldwin SR-4 load cells. In an endless variety of applications, users of Baldwin SR-4 load cells have found them fast, accurate and economical for measuring load, fluid pressure or torque.

Send today for our latest bulletins! Address Department 3006, Baldwin-Lima-Hamilton Corporation, Philadelphia 42, Pa.



BALDWIN-LIMA-HAMILTON

Philadelphia 42, Pa. • Offices in Principal Cities
In Canada: Peacock Bros., Ltd., Montreal, Quebec

When inquiring check CP 1810 on handy form, pgs. 2-3



FOR lower production costs
...stronger, neater closures
...ability to get out rush orders
in a hurry, you can't beat Union
Special Bag Closing Machines! Specially built to stand
up under heavy production schedules, these machines
provide the high output rates needed to meet modern
competitive conditions.

In the Union Special line, it's easy to find the right
unit to meet your particular requirements.
ASK FOR RECOMMENDATIONS.

SEND FOR THIS BULLETIN!



Get your copy of this 16 page illustrated bulletin containing helpful data and charts on the complete Union Special line of bag closing machines. **UNION SPECIAL MACHINE CO., 442 North Franklin Street, Chicago 10, Illinois**

UNION SPECIAL

When inquiring check CP 1811 on handy form, pgs. 2-3

CHEMICAL PROCESSING

PACKAGING

products is made in only a few minutes. Unit can be equipped with casters for easy rolling to production lines.

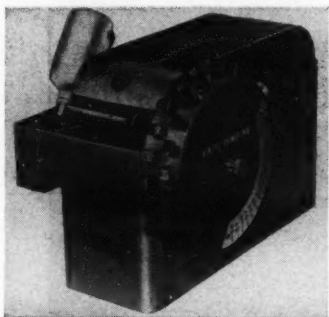
(Filling machine is a product of The Filler Machine Co. Inc., Dept. CP, Philmont Club Station, Pa. . . . or for more information check CP 1812 on handy form, pages two and three.)

Touching button delivers tape cut to fit job . . .

machine automatically cuts and moistens tape

Uses: Two operators can use machine simultaneously to supply moistened gummed tape of any length to 105".

Features: By pushing the proper button, machine measures, cuts, and delivers tape. Temperature of water is thermostatically controlled. Cutting blades of tool steel are self-sharpening. Parts subject to corrosion are stainless steel.



Automatic dispenser simplifies taping of packages

Description: Machine is 12" high, 12" wide, and 20" long, and is electrically operated from any 110 volt 60 cycle outlet.

(200E Electric Clip-A-Tape is manufactured by Ideal Stencil Machine Co., Dept. CP, 103 Iowa Avenue, Belleville, Illinois . . . for additional information check CP 1813 on form, pages 2 and 3.)

For more information on product at right, specify CP 1814 . . . see information request blank between pages 2 - 3. ➡

When you're face to face with a special situation

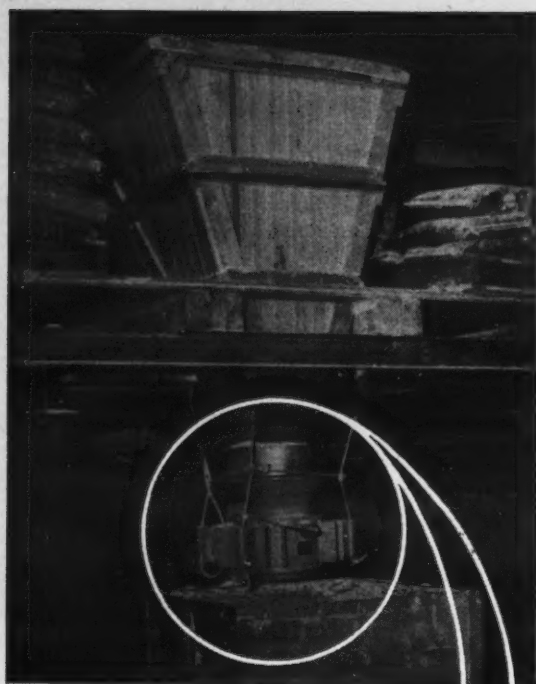
Does a packaging "bug" have you stymied? Whether it involves equipment, handling in transit, or a special feature in your Multiwall Bag itself, chances are Union has helped someone solve a similar problem. Take advantage of this diversified experience.

UNION MULTIWALL BAGS

UNION BAG & PAPER CORPORATION

Woolworth Building, New York 7, N. Y.





A manufacturer of glazed tile says, "Tile losses due to iron contamination have been almost completely eliminated through magnetic cleaning of body constituents accomplished by



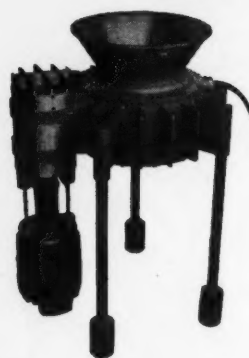
Magnetic Separators

Are you getting complaints from customers about fine magnetic particles or tramp iron mixed in any powdered or granular materials you ship. Install FRANTZ DRY FERROFILTERS and get rid of your iron contamination troubles. A stack of grids, strongly magnetized by a direct current coil provides extremely high efficiency of removal of magnetic particles. Ample "shakedown" is insured by an eccentric-weight vibrator. Two models — from 25 to 1000 cu. ft. per hr. capacity. For complete information . . .

Send for BULLETIN 46-E

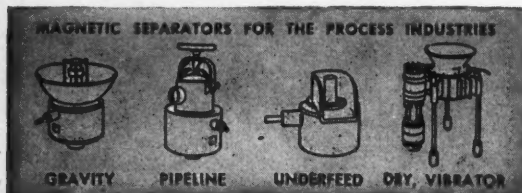
S. G. FRANTZ CO., Inc.

P. O. Box 1138, Trenton 6, N.J.



RENTAL PLAN

Prove the efficiency of the FRANTZ FERRO-FILTER on your operation at low cost. Write for details.



When inquiring check CP 1815 on handy form, pgs. 2-3



Insulation is snapped on 8" pipe

One-piece glass fiber pipe insulation is used to take advantage of —

lower heat losses, less labor

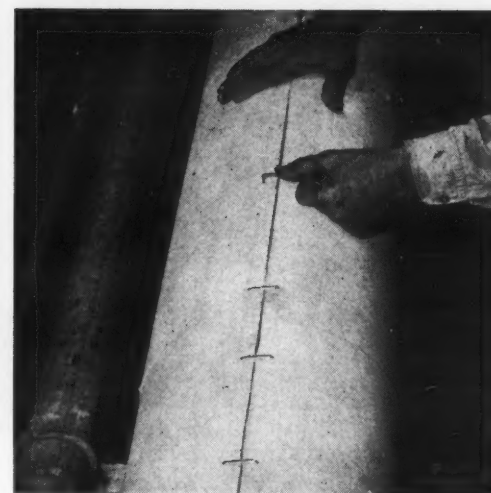
**Texas City Chemical finds that
easily-installed material saves 30,000
Btu per hour, with 1/2" less
wall thickness**

Problem: Over 1700 feet of pipe that was to carry steam or molten sulfur at temperatures up to 300°F had to be insulated at Texas City Chemical Company's new dicalcium phosphate and sulfuric acid plants at Texas City, Texas.

Solution: Company's chief engineer approved G-B Snap-On® glass fiber insulation, when calculations showed less heat loss at a lower material cost than another widely-used insulation material.

The pipe insulation, composed of blow glass fibers bonded with phenolic resin, was supplied in standard one-piece sections six feet in length. It was spread apart at the seam and snapped-in-place

engineering and maintenance



Staples are used to close seam

Layer of mastic is applied . . .



on the pipe. Foster's C.I. 60-25 weatherproofing mastic was hand-trowelled over covering — then wrapped with Glasfab — and coated again.

Results: Besides material and heat savings, the insulation contractor (Precision Insulating Co.) reports that the labor costs were 20% less than the job estimate (based on time standards for other insulating materials).

At 300°F mean temperature, the following heat loss comparison was calculated for the job. At this temperature, a savings of over 30,000 Btu per hour is found, as shown in following table. This improved insulation performance resulted even

Nominal
pipe
size

8"

6

4

3

2

1

Heat Loss Comparison Snap*On vs Competitive Insulation

Nominal pipe size	Length (ft)	Competi- tive in- sulation thickness	Btu/ft loss (300°F)	G-B Snap*On insulation thickness	Btu/ft loss (300°F)	Total Btu savings per hr
8"	444	2	120	1½	91	12,876
6	6	2	97	1½	76	126
4	300	2	73	1½	53	6000
3	582	1½	73	1	59	8148
2	432	1½	55	1	43	5184
	1764					32,304

... followed by glass fiber wrap, and more mastic

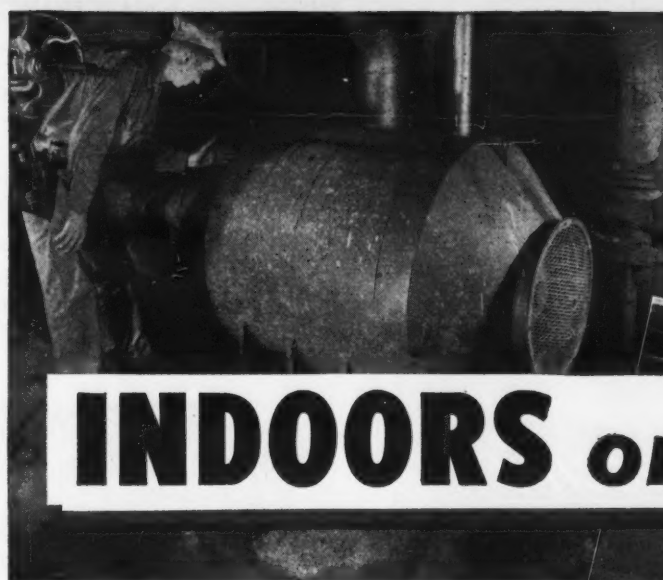


with ½" less wall thickness.

As the insulation did not chip, break, or crumble, no tailings were left around installation area.

One-piece glass fiber pipe insulation is available in sizes that will fit pipe from ¾ inch to 24 inches nominal diameter, inclusive.

(Snap*On pipe insulation is a development of Gustin-Bacon Manufacturing Company, Department CP, 210 West 10th Street, Kansas City 5, Missouri ... or for more information concerning manufacturer's product, reader may simply check CP 1816 on handy form which is located between pages two and three.)



ALLIS-CHALMERS
Totally-Enclosed
Fan-Cooled
MOTORS

INDOORS or OUT

DIRT and CORROSION

Can't Hurt These Motors

Here is a totally-enclosed type of motor that will solve many of your dirt and corrosion problems. Install anywhere, indoors or out.

Cooling System is Self-cleaning

Cooling air is carried through the heat-exchanger tubes with sufficient velocity to expel practically any kind of dirt. If oily or sticky dirt should cling, tubes can be ramrodded clean in a few minutes because tubes are straight and tube ends are exposed.

Choice of Corrosion-resistant Materials

You can lick corrosion with this motor, too. Tubes are available in a variety of materials to meet practically any corrosive atmospheric condition. Allis-Chalmers tube-type motors have long and successful experience in such difficult applications as caustic plants, refineries and petrochemical plants, power plants with fly ash problems and many others.

Next time you need a motor for a dirty or corrosive location or for outdoor operation in all kinds of weather, call your Allis-Chalmers District Office. Get complete information on Allis-Chalmers tube-type totally-enclosed, fan-cooled and explosion-proof motors. Or write Allis-Chalmers, Milwaukee 1, Wisconsin, for Bulletin 51B7149. Available in ratings on frames larger than NEMA 505 up to 3000 hp.

A-4222

Texrope and Vari-Pitch are Allis-Chalmers trademarks.

Sold ...

Applied ...

Serviced ...

by Allis-Chalmers Authorized Distributors, Certified Service Shops and Sales Offices throughout the country.



CONTROL — Manual, magnetic and combination starters; push button stations and components for complete control systems.

TEXROPE V-belts in all sizes and sections, standard and Vari-Pitch sheaves, speed changers.



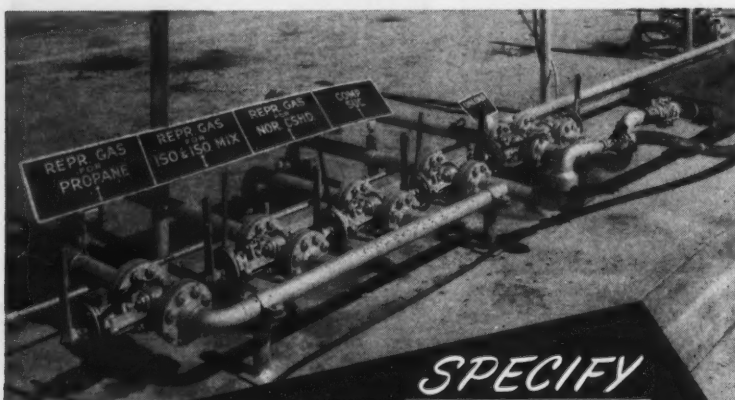
PUMPS — Integral types from ¾ in. to 72 in. discharge and up.



ALLIS-CHALMERS

When inquiring check CP 1817 on handy form, pgs. 2-3

for dependable, trouble-free control
"of hard-to-hold" fluids



SPECIFY HOMESTEAD Lever-Seald VALVES

they provide sure shut-off . . .

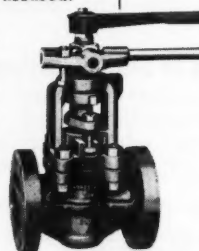
ARE STICK PROOF . . . OPERATE INSTANTLY

A positive, drop-tight seal and instant, stick-proof operation under all fluid, temperature or pressure conditions, is assured by the exclusive, built-in, Homestead Lever-Seald mechanism. This powerful lever-and-screw device not only presses the valve's tapered plug firmly into its seat to form a drop-tight seal, but also provides a positive means of relieving seating pressure just enough to overcome friction and permit easy operation. And because all operating parts and valve seating surfaces are fully protected in both the open and closed positions from the corrosive or erosive effects of line fluids, long, dependable, trouble-free service is doubly assured.

If "hard-to-handle" fluids are your problem, specify Homestead Lever-Seald Valves for your next installation or as replacements. You'll be glad you did.

We make them in metals and alloys to specification in sizes 1½" to 12", for pressures from vacuum to 1500 lbs., and for temperatures from 40° below zero to 1100°F. Dry seat, or pressure gun lubricated optional.

For complete details and copy of VALVE REFERENCE BOOK No. 39-3, MAIL THE COUPON TODAY.



Without obligation, send me Catalog 39-3 covering Homestead Lever-Seald Valves.

NAME _____

COMPANY _____ TITLE _____

ADDRESS _____

CITY _____ STATE _____

HOMESTEAD VALVE MANUFACTURING COMPANY

P. O. Box 140

Coraopolis, Pa.

When inquiring check CP 1818 on handy form, pgs. 2-3

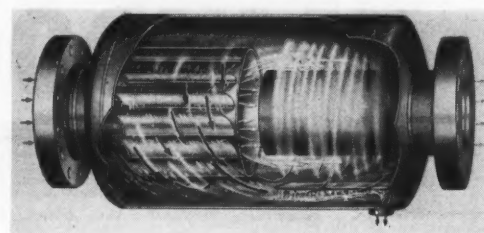
ENGINEERING & MAINTENANCE

Entrainment — including water, oil, and solids — removed from lines by separator . . .

centrifugal principle assures clean flow through horizontal steam, gas, and air lines

Uses: In horizontal steam, air, and gas lines.

Features: Centrifugal force principle is applied in separator for removing entrainment including water, oil, and solids from pressure line delivering flow to equipment.



Separator is self-cleaning

Description: Identified as the 31-N, device is a refinement of manufacturer's 30-N separator. It installs in minimum space, occupying scarcely more space than section of pipe it replaces. Unit is self-cleaning and may be used with a wide range of pressures. Construction is fabricated steel.

(Moisture separator is a product of Wright-Austin Company, Dept. CP, 3245 Wight St., Detroit 7, Mich. . . or for more information check CP 1819 on handy form, pages 2 and 3.)

Frame sizes 326 and smaller available in squirrel cage motor line . . .

construction improved, NEMA standards followed in manufacturer's complete line

Company's complete line of alternating current squirrel cage induction motors in frame sizes 326 and smaller have recently been announced. Design of frame sizes up to and including 326 follows newly established NEMA standards.

Motors (designated Type G) will retain all important features of manufacturer's "AP" line, while offering certain improvements inherent in redesign. For example, a 5-hp, 1800-rpm general purpose NEMA design B drip-proof, squirrel cage motor built on present 254 frame meets the following standards:

Temperature Rise (°C)	40
Locked Rotor Torque (% min)	185
Breakdown Torque (% min)	225
Locked Rotor Current at 220 v (amps max)	90
Slip (% max)	5
Service Factor	1.15

Under new standards, 5-hp, 1800-rpm motor is on 215 frame. None of performance standards are

NEW

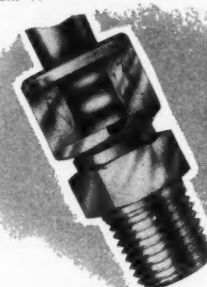
\$47,000,000⁰⁰
LEAK DETECTOR



This foolproof leak-detecting device is guaranteed to locate most of your leaks very quickly. To locate leaks, you merely pipe up the plant, then check each joint for a tight seal. Most leaks will show up on this device at start-up time. Those that are not found at start-up will usually be found as soon as the plant is in operation; vibration will make it easier for you to find the leaks.

This seems like an expensive way to find leaks when you consider that the leaks could be prevented by specifying Swagelok Tube Fittings.

Leaks are expensive. Stop them before they happen. Specify Swagelok. For catalog write Department 41



Swagelok®

TUBE FITTINGS

**BRASS • ALUMINUM • STEEL
STAINLESS STEEL • MONEL**

CRAWFORD FITTING CO.

884 E. 140th Street

Cleveland 10, Ohio

When inquiring check CP 1820 on handy form, pgs. 2-3

CHEMICAL PROCESSING



altered, and performance in re-rated frames are within limits of present values.

In appearance, motors are similar to present designs. Construction-wise, models have cast-iron frames and end shields. Rotors are of pressure-cast aluminum. Bearings are grease-lubricated, medium series, double-shielded ball bearings, capable of relubrication without dismantling motor. Stator windings are random or mush wound of heavy Formvar-coated wire in semi-closed slots. Stator receives multiple dips and bakes to assure protection against moderate amounts of moisture, weak acids, and alkalis.

In the open motor (Type G) intake openings in end shields have greater protection than in old design. Located in bottom half of end shield, these openings are high enough above base to minimize probability of incoming air sweeping dust or lint from floor or base. All continuous rated totally-enclosed motors under this design (Type GZ and Type GZZ), even smallest integral horsepower sizes, are fan-cooled. Motors are initially available in frame sizes 182 and 184. Larger frame sizes will become available at approximately five month intervals.

(Squirrel cage induction motors are a product of Allis-Chalmers Manufacturing Company, Dept. CP, 1126 S. 70th St., Milwaukee 1, Wis. . . . or for more information check CP 1821 on handy form, pages 2 and 3.)

Documents O-ring production and application

Detailed documentation of production and application of rubber O-ring seals is given in 16-page brochure. Included are sections on end products, O-ring sizes, dash numbers and variable tolerances, dimensional data for installation of standard size O-rings, cross-sectional drawings of correct and incorrect installations, and methods of utilizing O-ring sealing properties.

O-ring seal brochure is available from Dept. KP, Minnesota Rubber & Gasket Co., Dept. CP, 3630 Wooddale Ave., Minneapolis 16, Minn. When inquiring reader may simply specify CP 1822 on the convenient Reader Service slip which is located between pages 2 and 3.

For controlled heating of liquids and gases

CHROMALOX

Electric Circulation Heaters

including

- Water, oils and heavy fuel oils.
- Nitrogen, steam, air and other gases.
- Aroclor, Dowtherm, Prestone and other heat-transfer mediums.

Chromalox Electric Circulation Heaters are "packaged" heaters ready to install and connect wherever you need dependable heat that is efficient, economical and easy to use. They give you measured quantities of heat up to 750° F. that can be accurately controlled and maintained around the clock. May be used in series. Available in capacities from 1 kw. to 100 kw. in standard voltages.

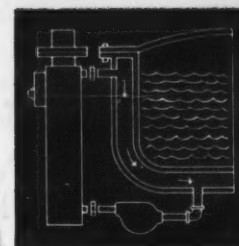
CHROMALOX CATALOG 50

contains complete data on Chromalox Circulation Heaters for all applications. Write for your copy today.

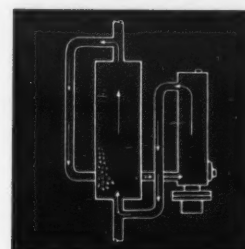


CHROMALOX

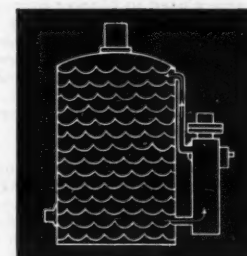
Electric Heat for Modern Industry



Circulation heater connected to jacketed process kettle.



Circulation heater as part of nitrogen heating assembly for reactivating alumina.



Circulation heater connected to water tank as "side-arm" heater.



This coupon will bring you catalog 50

Industrial Division, EDWIN L. WIEGAND COMPANY
7517 Thomas Boulevard, Pittsburgh 8, Pa.

10-73

Please send me Catalog 50.

Name _____

Company _____

Street _____

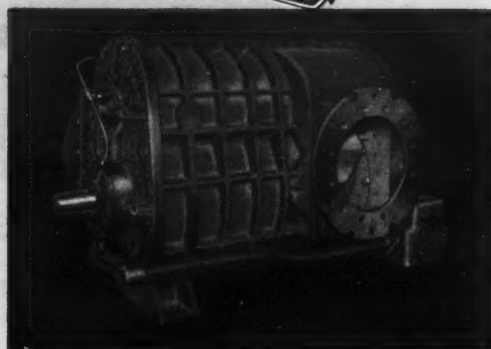
City _____ Zone _____

State _____

When inquiring check CP 1823 on handy form, pgs. 2-3



when you install
**THE Standardaire®
Blower**



you'll
have
space
to
spare

You'll marvel at the proportion of floor space used to blower output by this compactly designed, highly dependable unit. The *Standardaire* Blower is precision manufactured to move more gas or air with less wear than other blowers of equal size or weight... and does it with less maintenance and power costs, too.

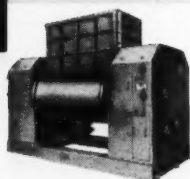
The *Standardaire* Blower employs the proved principle of compressing gas or air on a modified adiabatic cycle. This enables *Standardaire* to offer you a wider range of pressures with less internal losses. High pressure gases and air are confined to the discharge end of the blower, because of the continuous sealing operation throughout the entire length of the *Standardaire* accurately machined rotors. Thus, leakage lines are shorter, and shock-pockets of air or gas eliminated.

Write today for further information on *Standardaire* Blowers... get your copy of the new Blower bulletin.

READ STANDARD
CORPORATION

Read Standard also manufactures a complete line of chemical mixers for laboratory or industrial use. For information write, Read Standard Corp., York, Pa.

BLOWER-STOKER DIVISION
378 Lexington Avenue
New York 17, New York



When inquiring check CP 1824 on handy form, pgs. 2-3

ENGINEERING & MAINTENANCE

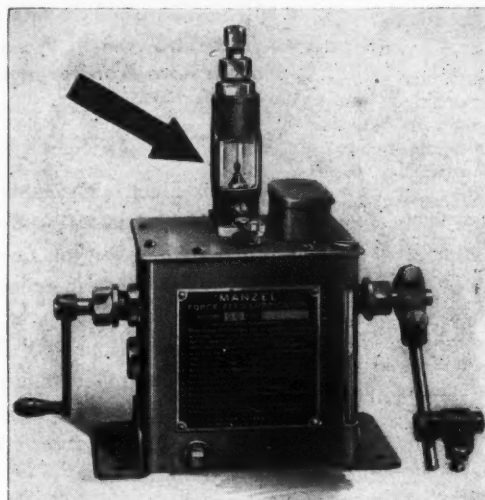
Non-clouding fluid developed for use in sight glasses of force feed lubricators...

fluorochemical does not polymerize or gum up when high detergent oils are used.

Uses: For sight glass fluid in force feed lubricators, especially where heavy duty oils are used.

Features: Fluorochemical fluid does not dissolve or blend with hydrocarbon oils or the additives or detergents used in heavy duty lubricants. Hence, sight glasses do not cloud up. Also, fluorochemical is not syrupy and does not polymerize or gum up inner surface of sight glass.

Description: Fluorochemical 101 is a colorless, odorless, nonflammable liquid with specific gravity of 1.76 at 78°F. It is insoluble in water, oils, and



Sight glass fluid had been in use for periods of nine months without discoloring, even when heavy duty oils are used

most organic solvents. It does not swell or attack rubber or other gasket materials. Oil bubbles formed in it are small, facilitating more accurate metering.

(Photograph courtesy of Manzel Inc., 315 Babcock St., Buffalo 10, N.Y.)

(Fluorochemical 101 is a product of Fluorochemical Div., Minnesota Mining & Mfg. Co., Dept. CP, 367 Grove St., St. Paul 1, Minn. . . or for more information check CP 1825 on handy form, pgs. 2-3.

To rapidly estimate limiting velocity in liquid entrainment separators, use the nomograph appearing on page 184 of this issue.

Catawissa
PERFECT SEAL
Unions

HOT FORGED from solid, rectangular steel bars, designed and produced for dependable, long-life service under the severest piping conditions!

A TYPE FOR EVERY USE!
FOR ALL PRESSURES!
FOR ALL TEMPERATURES!



**Standard & Double
Extra Heavy
UNIONS**

Available with screwed or socket weld ends. 3000-lb. sizes 1/4" to 3"; 6000-lb. sizes 1/8" to 2".



**ORIFICE
UNIONS**

With screwed or socket weld ends. 3000-lb. and 6000-lb. service.

**MALE & FEMALE
UNIONS**



With steel-to-steel, bronze-to-steel, stainless steel-to-steel or orifice seats. 3000-lb. service only.

**FULL STAINLESS &
FULL ALLOY
STEEL UNIONS**



With screwed or socket weld ends. 3000-lb. and 8000-lb. service.

WRITE FOR CATALOG 11
showing the complete Catawissa
line of Perfect Seal Products

**CATAWISSA VALVE AND
FITTINGS COMPANY**

620 Mill St. • CATAWISSA, PA.

When inquiring check CP 1826
on handy form, pgs. 2-3

CHEMICAL PROCESSING

MAINTENANCE

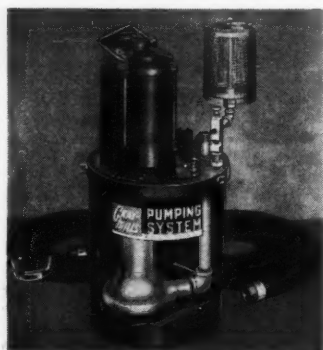
Abrasive liquids handled without harm to agitator pumping units . . .

no bearings, seals, or packings are below liquid level

Uses: For agitating and pumping liquids carrying solid content which must be mixed or kept in suspension.

Features: Units will handle liquids having a high abrasive content without binding or harmful wear, because no bearings, seals, or packings are below liquid level.

Description: Pumps are available in container sizes ranging from 2 to 40 gal. While most units are assembled in round containers, rectangular and odd shape containers are available to meet individual specifications. Pump and motor units without container are also available. Units are supplied with standard or explosion-proof motors.



Pumps available in container sizes from 2 to 40 gal

(Agitator pumping units are a product of Graymills Corporation, Dept. CP, 3705 N. Lincoln Ave., Chicago 13, Ill. . . . or check CP 1827, pages 2 and 3.)

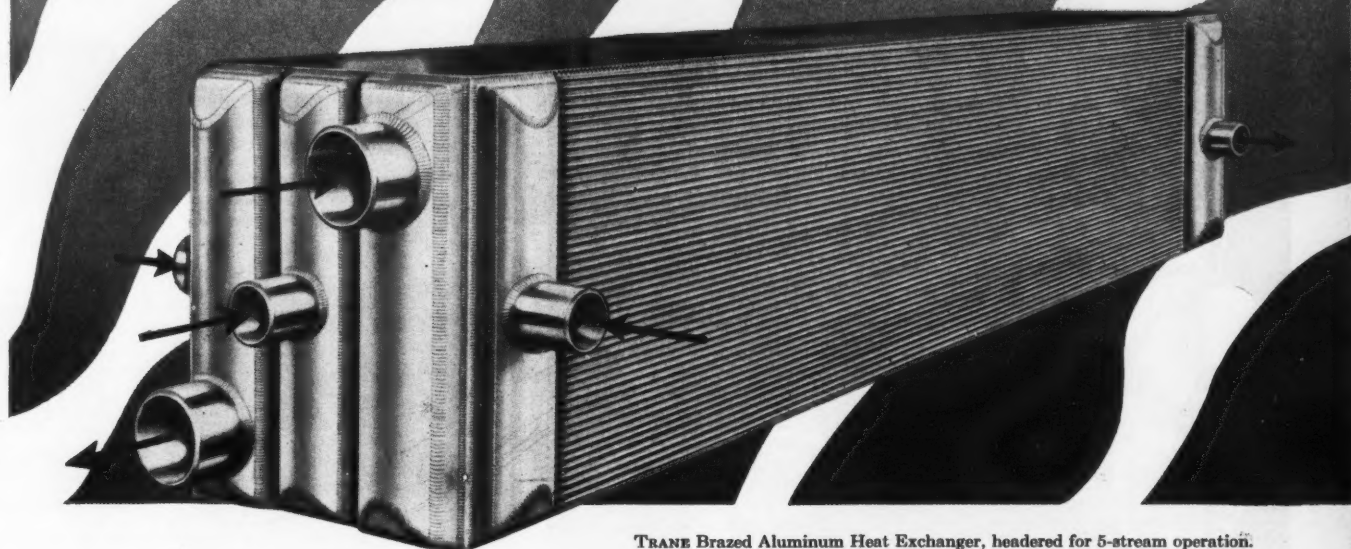
Illustrates production of wire screens

Production of woven wire screens for sizing, separating, or screening operations, is illustrated in four-page bulletin.

Bul 66 is available from Simplicity Engineering Co., Dept. CP, 1939 Ralph St., Durand, Mich. When inquiring specify CP 1828 on handy form, pages 2 and 3.

5 passes... 5 gases...

with just one Trane heat exchanger



TRANE Brazed Aluminum Heat Exchanger, headered for 5-stream operation.

Multi-fluid heat exchanger for large scale process heat transfer saves space, saves cost

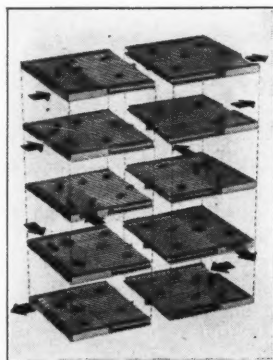
The problem of heat transfer between three, four, five or more liquids or gases in process operation can be solved by lighter, more compact, more economical TRANE Brazed Aluminum Heat Exchangers. One multiple-stream TRANE unit has in many instances occupied $\frac{1}{3}$ the space at $\frac{1}{4}$ the weight of conventional heat exchangers, at far less cost . . . making it particularly well suited for processes using multi-stream heat

transfer, such as air separation, helium and ethylene recovery. The reason . . .

More efficient heat exchange surface of TRANE brazed aluminum gives you a lighter weight heat exchanger that packs up to 450 sq. ft. of heat transfer surface into one cubic foot, yet operates at pressures up to 500 psig with temperatures as low as -350° F.

Whether your heat exchange problem involves close temperature approach, low temperatures or multi-fluid heat transfer, there is a TRANE Brazed Aluminum Heat Exchanger to fit your needs. Our 30 years' experience in all phases of heat transfer plus our laboratory facilities provide the solution to these problems.

For further information, ask your TRANE Sales Office for a copy of "Extended Surface Heat Transfer Equipment" or write TRANE, La Crosse, Wisconsin.



This symbolic drawing shows how one TRANE Brazed Aluminum Heat Exchanger can handle as many as five fluids simultaneously. Compact design simplifies headering. Units are available for cross-flow and counter-flow operation.

TRANE *brazed aluminum heat transfer surfaces*

MANUFACTURING ENGINEERS OF AIR CONDITIONING, HEATING, VENTILATING AND HEAT TRANSFER EQUIPMENT
The Trane Company, La Crosse, Wis. • East. Mfg. Div., Scranton, Penn. • Trane Co. of Canada, Ltd., Toronto • 87 U.S. and 14 Canadian Offices.

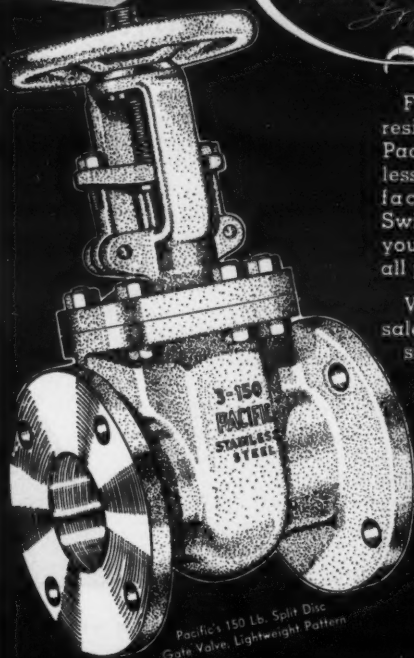
NOW!
Competitively
Priced
Stainless Steel
Gate Valves

**PACIFIC
VALVES**
Inc.

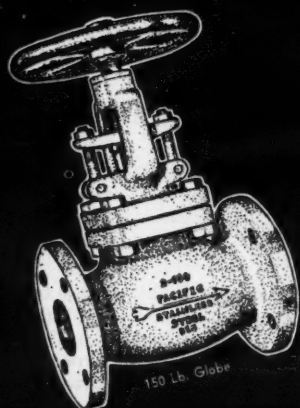
QUALITY

For dependable, corrosion resistant valves, investigate Pacific's complete line of stainless steel valves. Pacific manufactures Gate, Globe and Swing Check Valves to meet your material specifications, in all popular sizes and pressures.

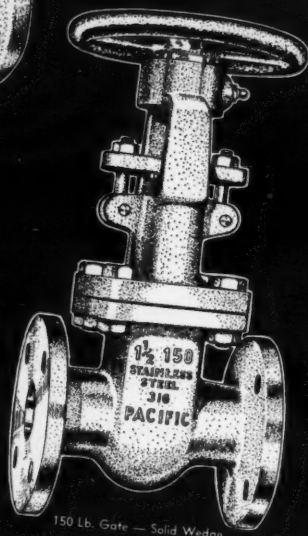
Write today for Pacific's new sales brochure SS101 "Corrosion Resistant Valves."



Pacific's 150 Lb. Split Disc Gate Valve, Lightweight Pattern



150 Lb. Globe



150 Lb. Gate — Solid Wedge

PACIFIC VALVES, INC.

3201 WALNUT AVENUE • LONG BEACH 7, CALIFORNIA

Sales Offices In All Principal Cities



300 Lb. Globe Valve



150 Lb. Swing Check Split Body



400 Lb. Gate



150 Lb. Swing Check Ball Seat



150 Lb. Gate — Split Disc Lightweight Pattern

When inquiring check CP 1829 on handy form, pgs. 2-3

MAINTENANCE

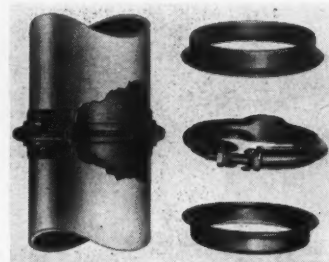
**Speed of assembly
featured by joint
for tubing . . .**

stainless and cold rolled steel fabrications offered

Uses: Quick assembly for 1 to 5" OD tubing.

Joint is suitable for chemical and food processing applications, as well as for coupling exhaust manifolds and exhaust piping joints, operating at normal internal combustion engine temperatures.

Features: Economy, ease of application, and speedy disconnect are possible with joint.



Joint is suitable for chemical and food processing applications

Description: Assembly joint is designated J-61 in all stainless steel, J-62 in cold rolled steel. A special model, J-41, for use with stainless steel tubing, has been designed for chemical, food industries.

(Tubing joint is a product of Marman Products Company, Dept. CP, 11214 Exposition Blvd., Los Angeles, Calif. Check CP 1830, pgs. 2 & 3.)

Shows utility of tin in industry

The story of tin, a picture narrative of the metal's present and prospective uses in American industry and of operations in mining it in Malaya, is told in 20-page booklet. Tin uses ranging from packaging Geiger counters and lubricating pistons to linking the world's communications and stabilizing plastics, are cited.

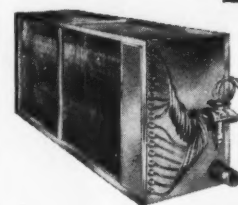
"Straits Tin" is available on letterhead request to The Malayan Tin Bureau, Dept. CP, 1028 Connecticut Ave., N.W., Washington 6, D.C.

Industry Had
Acid Vapor
Heating and
Cooling Problems

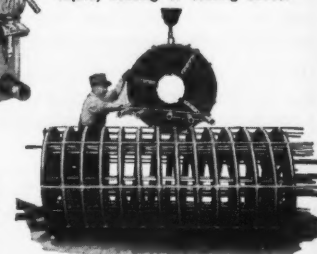
REMPE

Solved Them With...

**FIN AND PIPE COILS
OF STAINLESS STEEL**



Rempe Fin Type Coils are ideally suited for handling all types of corrosive air mixtures, gas or liquid, heating or cooling needs.



We have complete facilities and tested technique in the fabrication, welding and finishing of pipe coils made from all types of stainless steel.

Send details or blueprints for engineering advice and quotations on your requirements, for all types, all materials of pipe and fin coils.

REMPE COMPANY

330 N. SACRAMENTO BLVD.

CHICAGO 12, ILL.

When inquiring check CP 1831 on handy form, pgs. 2-3



**STOP
RUST**

before it starts

with ACB PRIMER



Once rust starts, you have a constant, costly battle. Seal iron or steel with fast-drying, moisture-proof, paint-anchoring ACB Primer for long-lasting protection. Users report up to 50% savings in repainting costs.

FREE! Your business letterhead request brings a copy of "The Barrier Against Rust". Get the facts on true rust prevention—write today!

THE TROPICAL PAINT & OIL COMPANY

1128-1266 W. 70th St., • Cleveland 2, Ohio

HEAVY-DUTY MAINTENANCE PAINTS SINCE 1883

When inquiring check CP 1832 on handy form, pgs. 2-3

CHEMICAL PROCESSING

**Smoother finish, stronger film
supplied by paints sprayed
while hot . . .**

faster application possible with most materials
without using a thinner

Uses: Finishing of objects that lend themselves
to spray painting, in maintenance or production
applications.

Features: When sprayed hot, paint has higher
solids content giving smoother finish, better coverage,
and stronger film with fewer coats. Equipment pro-
vides carefully controlled temperatures and pressures,
resulting in faster application. Heat replaces thinner
in most standard finishing materials when hot spray
method is used. Overspray and spray dust are re-
duced during application of paint. Machine used
allows quick changing of colors, fast cleaning. Floor
space occupied is small.



Hot spray method in use on tables. Note heater unit
conveniently mounted above

Description: Therm-o-Spray unit, utilized in hot
spray painting method, heats only seven fluid ounces
of material at a time — yet provides a capacity of 30
fluid oz/min. Paint flows smoothly and does not
pass through a circulating pump.

Therm-o-Spray equipment is comprised of an elec-
tric air heater, 1400w, for operation on 110 or 220v
AC; paint heater (heat exchanger) provided with
thermometers for paint and air temperature; and
special paint hose for hot air heating. Air and paint
heaters are mounted on same base plate.

Special spray guns and equipment are unnecessary.
Material is supplied to heater by pressure feed tank,
pump, or any conventional method employed to de-
liver material to spray gun.

(Hot spray painting unit is a product of Special
Equipment Corp., Dept. CP, 26 W. Putnam Ave.,
Greenwich, Conn. . . or for more information check
CP 1833 on handy form, pages 2 and 3.)

3-way answer to steam trap problems

• This three-way combination can help lick
your steam trap problems.

YARWAY IMPULSE STEAM TRAP . . .
the steam trap that gets equipment *hot in a
hurry and keeps it hot*. Small size, light weight,
body and all working parts of stainless steel.
Low cost, low maintenance.

YARWAY FINE SCREEN STRAINER . . .
with high-grade woven Monel wire screen
that is removed with the cap for easy clean-
ing. Rust-proof finish . . . straight threads,
machined faces and spark-plug type gaskets
on screen caps.

YARWAY ENGINEERING SERVICE . . .
32 trained YARWAY engineers working out
of YARWAY branch offices from coast-to-
coast, are constantly helping on *trap selec-
tion, installation maintenance and operation*.
Solving your trap problems is their job. It
will cost you nothing to call them in to
assist you.

YARNALL-WARING COMPANY
125 Mermaid Avenue, Philadelphia 18, Pa.

• **YARWAY IMPULSE STEAM TRAPS AND
STRAINERS** are immediately available
from more than 250 Industrial Dis-
tributors in the United States, Canada,
and other countries. For name of one
nearest you and **FREE Steam Trap
Bulletin** write . . .



YARWAY Impulse
Steam Traps. Over
900,000 success-
fully used through-
out industry.



YARWAY Fine
Screen Strainers.
"Police the pipe-
lines" in thousands
of plants.



Yarnall-Waring
Engineers. At your
service from coast
to coast.

impulse steam traps

And Yarway Fine Screen Strainers

When inquiring check CP 1834 on handy form, pages 2-3

ECO builds a *centrifugal pump*

- A Companion to the Famous ECO "All-Chem" Pump—this small, low-cost, Carpenter-20 Centrifugal offers many unique features.



Impeller and motor shaft assembly guarantee alignment and concentricity of mechanical seal.

Easy access to all internal parts by removal of 2 wing nuts.

Pyrex cover plate gives full visibility of fluid being pumped.

- **CONSTRUCTION**—Carpenter-20 stainless steel and duPont Teflon for all-chemical service. Biologically inert. Dynamically balanced, precision machined, unusually quiet in operation.
- **CAPACITIES**—up to 25 gpm., max. at 3450 RPM.
- **HEADS**—up to 55 ft., max.
- **SUCTION PRESSURE**—up to 15 in. vacuum, max.

ECO

Write for further information
ECO ENGINEERING COMPANY
12 New York Ave., Newark 1, N.J.

When inquiring check CP 1835 on handy form, pgs. 2-3

ENGINEERING & MAINTENANCE

Outlasts wear-resisting alloys by as much as 3 to 1 in abrasive service

Wear-hardening chrome-ferrous alloy, called Ze-VeScal W Series, has been developed for cast parts subject to abrasive wearing action of sand, gravel, cement, and like substances. Actual field tests of pug mill paddles, conveyor rollers, and fertilizer mixer blades cast from alloy indicate that they outwear identical parts cast in commonly used alloys by as much as three to one.

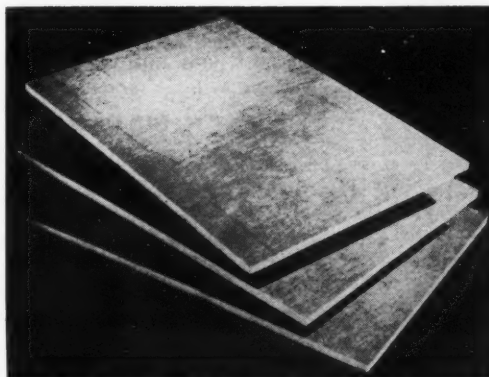
(Chrome-ferrous Alloy is a product of Calumet Steel Castings Corp., Dept. CP, 1636 Summer St., Hammond, Indiana . . . or for more information check CP 1836 on handy form, pages 2 and 3.)

Easily-installed acoustical board performs four functions . . .

attractive ceiling surface, noise reduction, heat insulation, fire resistance provided

Uses: Providing a permanent form of decks for commercial and industrial buildings, board serves as an attractive interior ceiling, and as thermal and acoustical insulation.

Features: Board performs four functions in poured-in-place gypsum roof decks. Lightweight, it is easy to install by standard methods, and strong enough to carry wet gypsum. The incombustible, porous board has a noise reduction coefficient of 75%. It is a barrier to heat and its use increases insulating value of deck, resulting in fuel savings. Fiberglass mat with which fibrous glass board is faced provides a uniform tan ceiling surface.



Acoustical board has 75% noise reduction coefficient

Description: Average thermal conductance ("C" value) of Fiberglass Acoustical Form Board at a nominal thickness of one inch is 0.25 Btu/ sq ft/0°F at 75°F mean temperature.

Board will not rot or decay. It is dimensionally stable and fibers are not affected by moisture. Individual boards are strong enough to be spaced at 32 3/8" without intermediate support.



*Have you
changed
your
address
recently?*

- If so, you'll want to insure that your copy of **CHEMICAL PROCESSING** reaches you without interruption. Just send us your new address . . . use the handy form below.

Please answer all questions in regard to your new affiliation, and in addition give us your former address including company, city and state.

mail this request to
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CHEMICAL PROCESSING**

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Chicago 11, Illinois

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Rating of Company
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CHEMICAL PROCESSING

ENGINEERING & MAINTENANCE

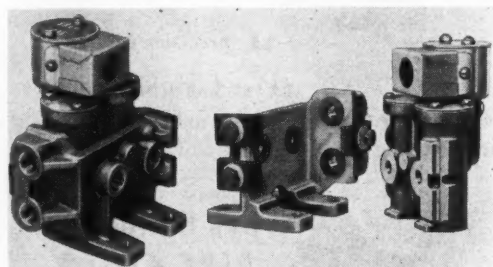
Material is installed in same manner as gypsum board. When poured gypsum decks are employed, board is laid between sub-purlins. Cross joints are kept in alignment by one-inch steel tee cross sections. Reinforcement is then set in place and gypsum concrete applied in conventional manner.

Acoustical board is available in these sizes: 32 x 48 x 1, 1½, and 2"; 32 x 42 through 47¾ and ¼" increments x 1"; and 24 x 36 through 96" in ¼" increments x 1".

(Acoustical board is a product of Owens-Corning Fiberglas Corp., Dept. CP, 1833 Nicholas Bldg., Toledo 1, Ohio . . . or for more information check CP 1838 on handy form, pages 2 and 3.)

Downtime cut by valve which can be replaced in seconds . . .

when body is removed, sub-base of unit remains undisturbed as permanent part of piping



Valve designed for pressures to 150 psi

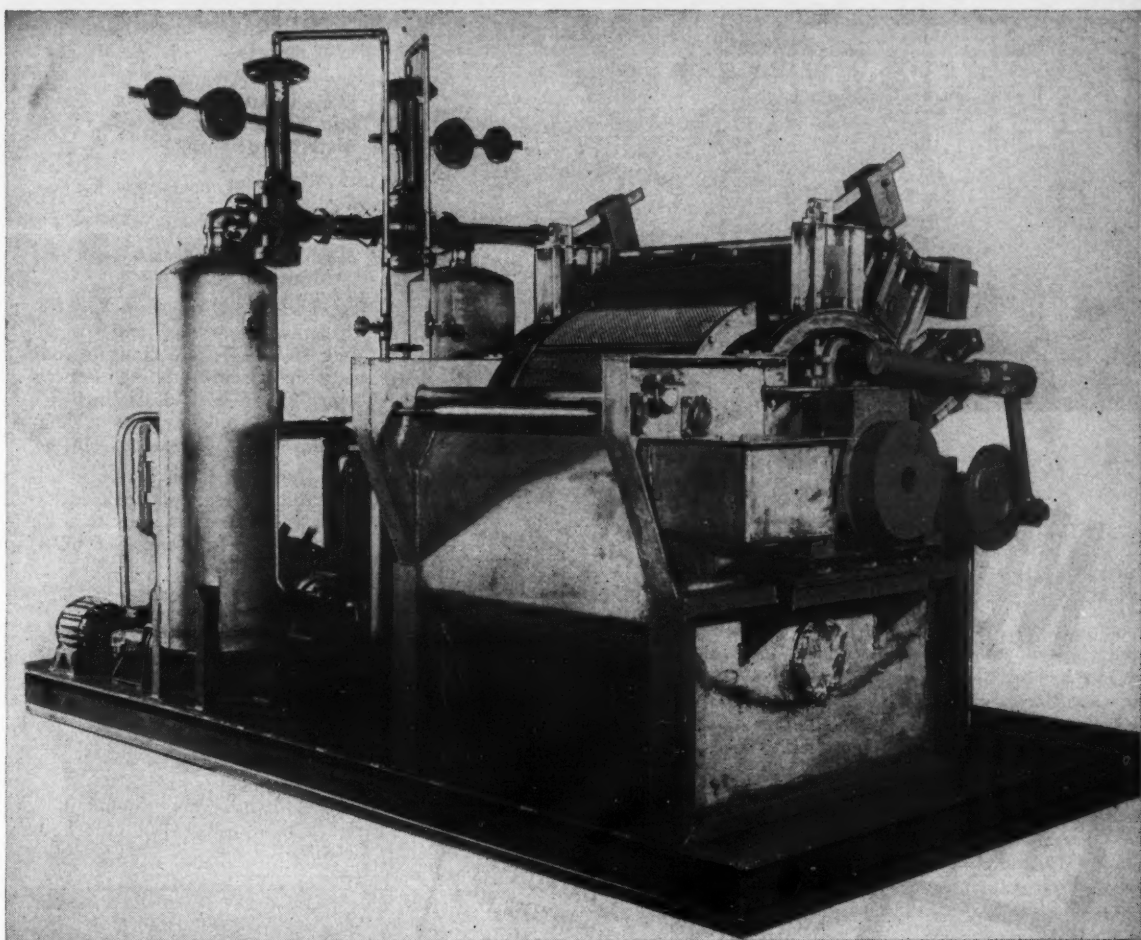
On production equipment, where maintenance downtime is costly, sub-base Crescent valve can be replaced in a matter of seconds. By loosening three holding clamp bolts entire valve body can be removed and replaced by a new one. Sub-base remains undisturbed as a permanent part of piping.

Units themselves are of Crescent design, pilot-operated, solenoid-controlled, 4-way valves, for air, light oil, and water — pressures to 150 psi.

(Solenoid valves are a product of Barksdale Valves, Dept. CP, 5125 Alcoa Ave., Los Angeles 58, Calif. . . . or for more information check CP 1839 on the convenient Reader Service slip which is located between pages 2 and 3.)

Need a guide to other engineering and maintenance ideas and equipment? . . .

It's easy . . . just check the handy, alphabetical Product Directory on pages 198 to 201, for pipe, valves, pumps, motors, electrical items, etc. This is still another service provided in every issue.



HIGH SUBMERGENCE STRING DISCHARGE CONTINUOUS VACUUM FILTERS

Industries using standard design drum and disc type continuous vacuum filters are often interested in a specialized Eimco filter to develop a new product, increase production or complete a research project.

Such was the case of the customer who ordered the machine shown above. It is a high submergence (55%) stainless steel drum type filter equipped with compression rolls, string discharge and wash headers.

This unit uses Eimco "pin" type agitator and the vacuum line is equipped with vacuum regulating valves. All necessary operating equipment including receivers, motors, pumps, etc., are mounted in standard Eimco package arrangement on a fabricated steel sub-base with piping in place and wiring to a control panel.

Call an Eimco Engineer and let him help you solve your filtration problems (no obligation to you). Eimco has been serving the processing industries for more than half a century.

THE EIMCO CORPORATION

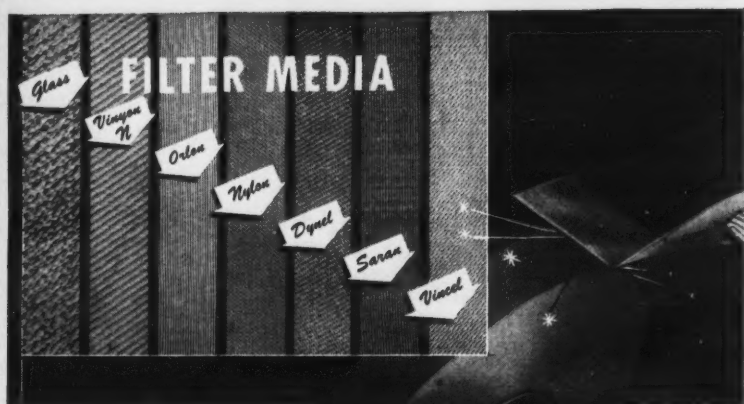
Salt Lake City, Utah—U.S.A. • Export Offices: Eimco Bldg., 52 South St., New York City

New York, N.Y. Chicago, Ill. San Francisco, Calif. El Paso, Texas Birmingham, Ala. Duluth, Minn. Kellogg, Ida. London, Eng. Paris, France Milan, Italy



You Can't Beat An Eimco

When inquiring check CP 1840 on handy form, pgs. 2-3



NO AX TO GRIND HERE!

We Manufacture All Types of FILTER CLOTH

NYLON
COTTON
POLYETHYLENE
ORLON** acrylic fiber
GLASS DYNEL

TEFLON**
VINCEL***
DACRON**
VINYON N*
SARAN

*T.M.—Union Carbide & Chemical Co.
**T.M.—E. I. du Pont de Nemours Co.
***T.M.—Reg. U.S. Pat. Off.

As manufacturers of an extensive line of Filter Cloths our analysis of and recommendations for your filter cloth problems will be unbiased . . . we have "no ax to grind" regarding any particular cloth.

Each of the cloths listed above offers different operating advantages. Each type has its own range of chemical resistance, its own temperature limits and its own degree of resistance to moisture, molds, fungi and bacteria. With such a variety we are in position to recommend a filter cloth that will give you the best service for your particular application. In writing for literature and test samples please tell us about your problem.

... for your Filter Paper requirements try NETONE Filter Paper. High tensile strength, high burst factor, abrasion resistant, crease resistant and chemical resistant. Send for a test sample.



The National Filter Media Corp.

General Offices & Mills: New Haven 14, Conn.
Western Office & Factory: Salt Lake City 1, Utah

Sales Offices—Representatives

Chicago, Ill. Cincinnati, Ohio Houston, Texas Oslo, Norway Johannesburg, South Africa
2627 West 19th St. Roselawn Center Bldg. 1406 Second National Bank Bldg. Nicolai Fris Edward L. Bohman

When inquiring check CP 1841 on handy form, pgs. 2-3

MAINTENANCE

Tube installation costs can be reduced by use of U-bends . . .

rolling-in operations are cut in half

Uses: For heat exchangers and condensers.

Features: U-bends reduce installation, handling, and overall unit costs. Design eliminates one tube sheet, cutting rolling-in operations in half. Individual tube bends handle differential expansion, eliminating floating head problems.

Description: Tubes are available to exact use sequence specifications. This enables users to stock complete sets of condenser tubes,



U-bends are packaged in expendable wooden pallets

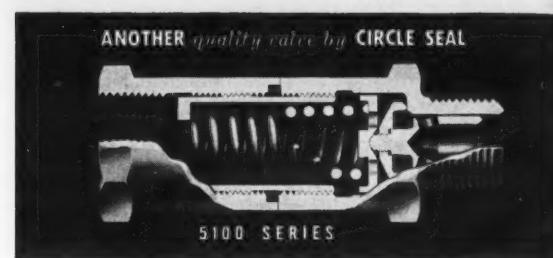
either prime surface tube or Trufin R (the integral finned tube). Tubes are packed in expendable wooden pallets.

(U-bend tubes are product of Wolverine Tube Div., Calumet & Hecla, Inc., Dept. CP, 1852 Guardian Bldg., Detroit 26, Mich. . . or check CP 1842, pages 2 and 3.)

Presents specifications of industrial fans

Dimensions, applications, and performance data on company's Type CS Tubeaxial and Type CSB Stackbooster fans are contained in 12-page bulletin.

Bul 650 is available from Robbins & Myers, Inc., Dept. CP, Springfield, Ohio. Specify CP 1843, pages 2 and 3.)



A RELIEF VALVE THAT DOESN'T LEAK!

- In-line design
- Adjustability that can't be tampered with
- Excellent flow characteristics
- Precise operating reliability
- Suitable for almost any gas or liquid

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CIRCLE SEAL precision valves
Representatives in Principal Cities.
JAMES DOND CLARK
2181 East Foothill Blvd • Pasadena 8, California
When inquiring check CP 1844 on handy form, pgs. 2-3

4

ways better than PIPE COILS

1.
SAVES SPACE

2.
EASILY CLEANED

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FASTER HEAT TRANSFER

4.
LOW COST

Thermo-Panels

Scientifically designed heat exchangers for which performance can be accurately anticipated . . . for use in the heating or cooling of liquids, slurries, soaps, waxes, acids, alkalis, electrolytes, powders, and mixtures.

Available in special shapes such as "U"s, "L"s, and cylinders . . . and in a wide range of materials, including iron, stainless steel, monel and other special alloys.

Send for FREE bulletin giving facts and prices.

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DEAN PRODUCTS, INC. • 616 Franklin Ave., Brooklyn 38, N. Y.
Sterling 9-5400

Manufacturers Representatives Wanted • Choose territories now open • Write for details

When inquiring check CP 1845 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Three films cover subject of V-belt drives and uses

Three 35 mm sound slidefilms are on subject of V-belt drives. Each runs about 20 minutes. They are titled "In Every V-Belt Drive," "For Better Driving," and "Selecting a Drive."

First film, in color, covers engineering principles that are basic in every V-belt drive application. Second deals with installation and maintenance of multiple V-belt drives. Third tells how to check characteristics to find best drive and then engineer it to do the job. Films make good use of drawings, humor, and step-by-step photographs to get points across.

Request for showings of slidefilms should be made to Allis-Chalmers Manufacturing Co., Dept. CP, 1126 S. 70th St., Milwaukee 1, Wis.

Eliminate noises caused by exhaust from steam and air devices . . .

three silencer models are available for use in critical or non-critical areas

Uses: For use on steam vents, steam safety valves, hogging jets, gas turbines, air nozzles, evacuating ejectors, and similar devices discharging high velocity steam and air into the atmosphere.

Features: Silencers are designed to eliminate high and low frequency noises caused by high velocity discharge from steam and air devices. They operate on company's patented snubbing principle and employ specially designed acoustic reactance chambers plus special sound absorbing material.

Description: Series ADS silencers are available in three models: ADSO for optimum silencing in critical areas; ADSS for silencing required in semi-residential and light industrial areas; and ADSC for commercial silencing in non-critical areas. All models are available in standard 8 to 30" pipe size, but special sizes can be furnished upon request.

(Exhaust Silencers are a product of Burgess-Manning Co., Dept. CP, 741 E. Park Ave., Libertyville, Ill. . . . or for more information check CP 1846 on the convenient Reader Service slip which is located between pages 2 and 3.)

Tells how to maintain floors, roofs, basements, foundations

How to solve dangerous and unsightly floor conditions is explained in six-page folder. Maintenance ideas for basements, foundations, reservoirs, and roofs are also included. Typical applications of company's maintenance products are pictured.

Folder MP-M254 is issued by Stonhard Company, Dept. CP, 500 Stonhard Building, 1306 Spring Garden St., Philadelphia 23, Pa. When inquiring reader may simply specify CP 1847 on handy form, pages 2 and 3.

BORN IN THE 1880's

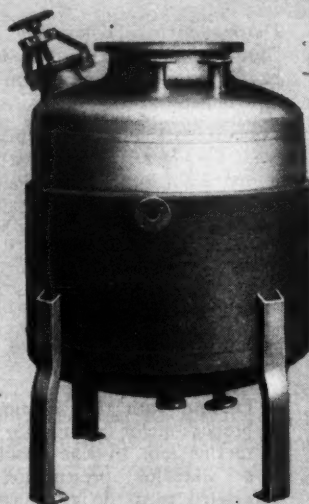
WHEN THE TIME
CLOCK WAS INVENTED

Koven

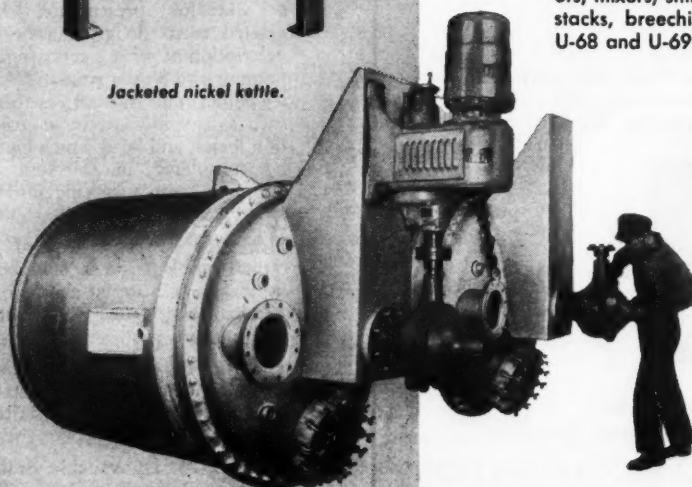
WAS MAKING INDIVIDUALIZED CHEMICAL EQUIPMENT

The speed and efficiency with which the newly-invented time clock maintained employee records quickly established it as an indispensable aid to American industry. Chemical manufacturers of this period were also quick to make use of the greater speed and efficiency possible with KOVEN Individualized Equipment, specifically designed to their exact needs. Today, as then, KOVEN's expert craftsmanship and know-how are at the service of the chemical industry—enabling manufacturers to achieve higher and faster production with cost-cutting, dependable KOVEN units. If you have a production problem, one of our trained representatives will be glad to discuss it with you—of course, there is no obligation. Send for Facilities Catalog #490.

Complete modern facilities including X-ray inspection and stress relieving which insure quality control. KOVEN equipment in all commercial metals and alloys include: pressure vessels, extractors, mixers, stills, condensers, kettles, tanks, chutes, containers, stacks, breechings, coils. Fabrication to A.S.M.E. Code Par. U-68 and U-69 a specialty.



Jacketed nickel kettle.



A.S.M.E. Code jacketed tank with bolted cover and drive.



Plants: Jersey City, N.J.



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154-E Ogden Ave., Jersey City 7, N. J.

KOVEN FOR INDIVIDUALIZED EQUIPMENT SINCE 1881

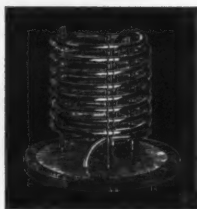
When inquiring check CP 1848 on handy form, pgs. 2-3

Nobody buys TANTALUM except for one reason: ECONOMY!

Tantalum is *immune* (not merely resistant) to any of the following: hydrochloric acid, bromine, iodine, hydrogen peroxide, nitric acid and perchloric acid. This immunity eliminates, at its source, the many headaches of corrosion—shutdowns, lost production time, repairs, replacements, product contamination or spoilage, fume damage, and a host of other *costly* corrosion results.

In hundreds of installations, tantalum has proven its economy over all other materials used or tested. Because tantalum is immune, light gauge construction is used, eliminating expensive framework and supports. Tantalum, being a metal, is an excellent heat conductor, saving steam or cooling water, permitting closer process controls. Experienced Fansteel engineers can tell you, quickly, whether or not tantalum could help lower your production costs.

Use Tantalum with economy for most acid solutions and corrosive gases or vapors except HF, alkalis, or substances containing free SO₃.



Ask for a copy of our free booklet
"Acid-Proof Tantalum Equipment for Chemical Operations"

FANSTEEL METALLURGICAL CORPORATION
NORTH CHICAGO, ILLINOIS, U.S.A.

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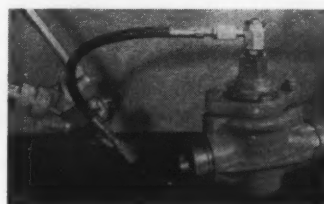
When inquiring check CP 1849 on handy form, pgs. 2-3

MAINTENANCE

Lubricant won't extrude from coupler when it's removed from fitting

Uses: With company's high-pressure lubricant hand guns and bucket pumps.

Features: Unit is a positive shut-off device to stop all extrusion of lubricant from coupler immediately after removal from fitting.



Description: Known as the "400" Button Head coupler, device has 1/4" pipe thread pull-on and top connections.

(Coupler is a product of Rockwell Mfg. Co., Dept. CP, 400 N. Lexington Ave., Pittsburgh 8, Pa. . . or for more information check CP 1850 on handy form, pages 2 & 3.)

Slidefilm in booklet form aids pump selection

Dealing with the selection of proper motor pump for any specific job, 16-page booklet is a slidefilm presentation in printed form. It gives a brief description of what a centrifugal pump is and how it works. Then it points out various factors, such as quantity, pressure, friction losses, and head which must be considered in selecting a pump to meet a specific installation requirement.

Next step is presentation of a typical problem and its solution, by means of material shown on previous pages, such as charts and curves.

Finally, booklet states material recommended for various installations and gives actual installation views.

Form 7123 is available from Cameron Pump Div., Ingersoll-Rand Co., Dept. CP, 11 Broadway, New York 4, N.Y. When inquiring reader may simply specify CP 1851 on handy form, pages 2 and 3.

STOP VALVE CORROSION ...at lower cost

For handling most corrosive fluids, there's an Ace hard rubber, rubber-lined or plastic valve that will stop corrosion failures without costing you a fortune. Check this partial list:



- Plastic Diaphragm Valves 1/2" to 2"
- Rubber-Lined Gate Valves 2" to 24"
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- Hard Rubber Plug Valves 1/4" to 5"
- plus bibb cocks, ball check valves, float valves, etc.

For lists of chemicals that can be handled and other details write today to:

AMERICAN HARD RUBBER COMPANY
93 Worth St., New York 13, N. Y.

Manufacturers of quality rubber and plastic fluid-handling and processing equipment since 1852

**ACE rubber and plastic
processing equipment • SINCE 1852**

When inquiring check CP 1852 on handy form, pgs. 2-3

thousands of users PROVE
"HI-TEMP"
C-5 THREAD COMPOUND
IS BEST FOR ALL STUD THREADS
and STAINLESS STEEL APPLICATIONS

- ✓ speeds up dis-assembly time
- ✓ prevents stud breakage
- ✓ eliminates pitting of stainless steel

NO MORE FROZEN
OR GALLED STUDS
EVEN AT
1800° F

Let us SEND you a
FREE SAMPLE
so you can PROVE to YOURSELF
that C-5 will lick your toughest
stud breakage problems!

To assure easy maintenance on products having threaded assemblies many leading product engineers have specified the use of Fel-Pro C-5 as an anti-seize coating on stud threads prior to final production line assembly.

Fel-Pro's exclusive Colloidal-Copper formula allows for easy separation and reduces stud breakage of threaded assemblies after long exposures to extreme temperatures. It eliminates pitting of stainless and alloy steel even where dissimilar metals are joined.

Conduct your own tests with C-5 "Hi-Temp" at our expense. Write on your company letterhead for Free Sample and complete data sheet TODAY!

FELT PRODUCTS MFG. CO. 1515 Carroll Ave., Chicago 7, Ill



When inquiring check CP 1853 on handy form, pgs. 2-3

CHEMICAL PROCESSING

**One million gallons delivered
by hand pump without failure
or noticeable wear . . .**

corrosion-resistant unit is designed to accommodate many interchangeable accessories

Uses: Manual pumping of petroleum products, vegetable and mineral oils, cutting compounds.

Features: In laboratory test, unit delivered 1,000,000 gallons of liquid without failure or noticeable wear. It further proved to be unaffected by ice, dirt, or scale, and operated efficiently at the lowest temperatures in normal pumping applications.

Improvement incorporated in pump series is use of a corrosion-resistant stainless steel shaft, valves, valve plates, and valve springs. All other internal components are Permolited to resist deterioration.

Description: Known as the 688 Series, pump is designed to accommodate a wide range of interchangeable accessories. These include such items as a discharge spout, hose and nozzle, bottle filler spout, drip pan, meter and shut-off nozzle, so that it can be quickly and easily adapted from one use to another.

Hand pump offers additional flexibility through use of a universal outlet fitting to accommodate all accessory connections. A sliding suction pipe can be

extended from a minimum of 22" to a maximum of 40" so that pump is adaptable to either barrel, skid tank, or underground tank operation.

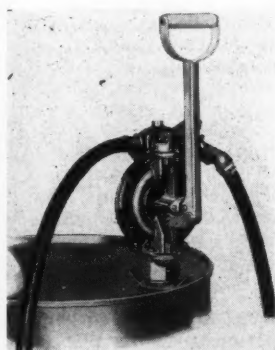
Unit incorporates a vacuum breaker for self-venting, and is self-priming, thus eliminating need for a foot valve. Liquid delivery is set at rate of 20 gpm at 100 strokes, with double-action diaphragm to assure a steady flow. High-vacuum unit is capable of pumping a 20' vertical lift under normal conditions.

(Hand pump is a product of Tokheim Corporation, Dept. CP, 1602 Wabash Ave., Fort Wayne, Ind. . . . or for more information check CP 1854 on handy form, pages 2 and 3.)

Applications and selection of metal bellows

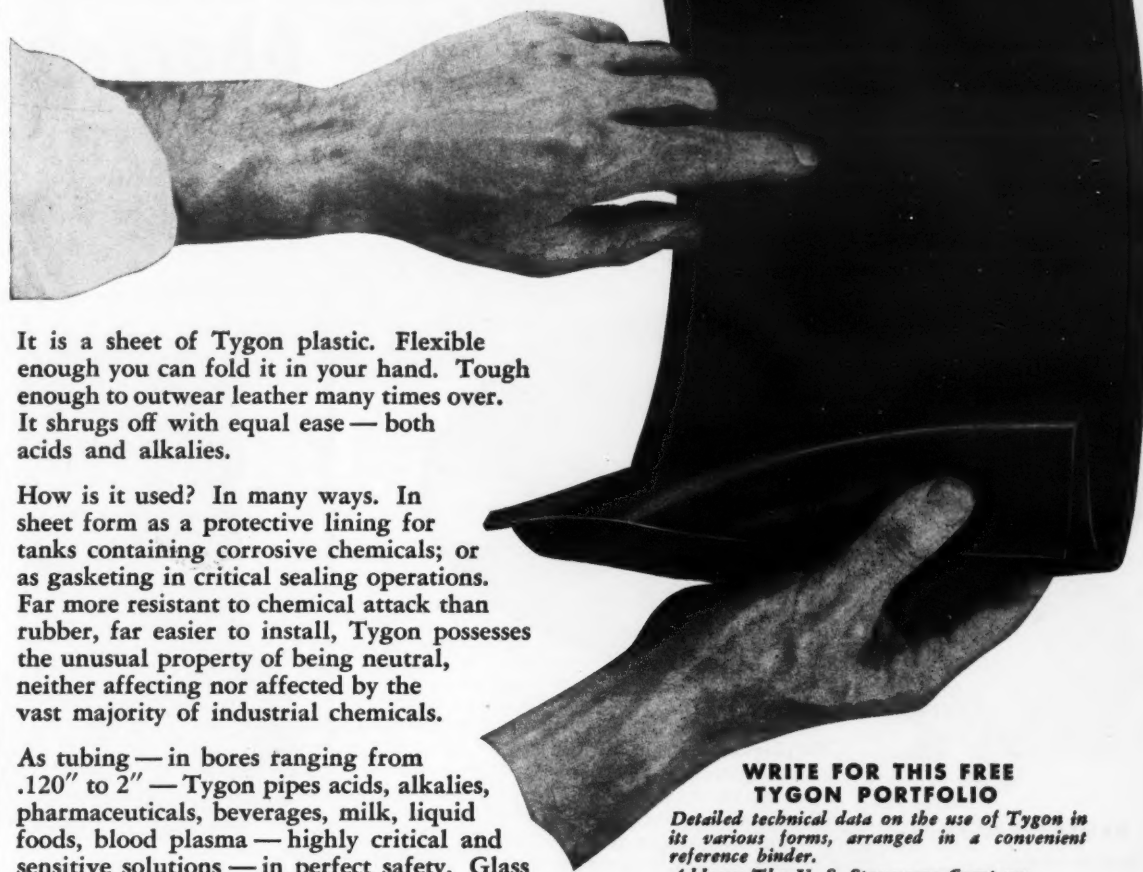
Manufacture, design, applications, and specifications for company's metal bellows are covered in 16-page catalog.

Cat 140 is available from Flexonics Corporation, Dept. CP, 1319 South Third Ave., Maywood, Ill. Specify CP 1855 on handy form, pages 2 and 3.



Pump is adaptable to barrel, skid tank or underground tank operation

YOU ARE LOOKING AT ONE THING Corrosion CAN'T TOUCH



It is a sheet of Tygon plastic. Flexible enough you can fold it in your hand. Tough enough to outwear leather many times over. It shrugs off with equal ease — both acids and alkalis.

How is it used? In many ways. In sheet form as a protective lining for tanks containing corrosive chemicals; or as gasketing in critical sealing operations. Far more resistant to chemical attack than rubber, far easier to install, Tygon possesses the unusual property of being neutral, neither affecting nor affected by the vast majority of industrial chemicals.

As tubing — in bores ranging from .120" to 2" — Tygon pipes acids, alkalis, pharmaceuticals, beverages, milk, liquid foods, blood plasma — highly critical and sensitive solutions — in perfect safety. Glass clear, flexible as a piece of string, Tygon Tubing is the standard of research laboratories the world over.

As a liquid Tygon serves both as a paint and as a dip coating. Applied by brush or spray, it protects metals and concrete from attack by acid fumes.

Tygon molds as readily as rubber, and in this form extends its protective qualities over an almost unlimited range of intricate shapes.

If corrosion is a problem to you — Tygon may prove the perfect answer.

376-D

WRITE FOR THIS FREE TYGON PORTFOLIO

Detailed technical data on the use of Tygon in its various forms, arranged in a convenient reference binder.

Address: The U. S. Stoneware Company
Plastics and Synthetics Division
Dept. CP-854
Akron 9, Ohio

Ask for the TYGON PORTFOLIO.



Plastics and Synthetics Division

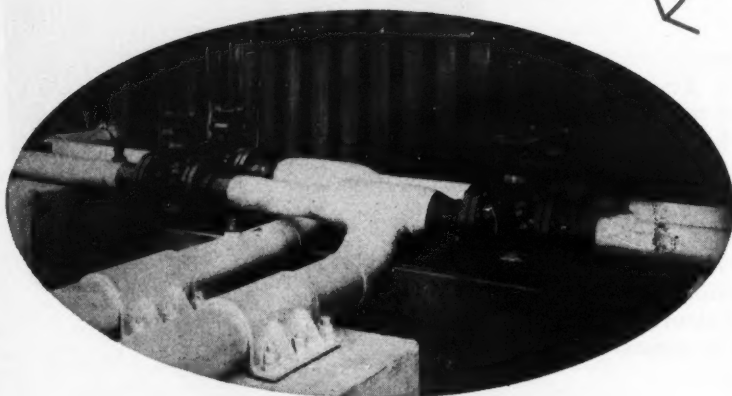
When inquiring check CP 1856 on handy form, pgs. 2-3

HAMER

PLUG VALVES

*can't
stick!*

Model FS15P illustrated here has Pressure Seal packings which require neither tightening nor adjustment.



HERE'S WHY:

The plug adjusting nut, an exclusive feature on all HAMER PLUG VALVES permits the plug to be lifted slightly from its seat, making it easy to open or close the valve. A simple turn lowers the plug back into its seat and holds it there in perfect alignment. No matter what the service conditions, or lapse of time between operations, this outstanding HAMER feature assures POSITIVE E-Z turn control of the plug at all times.

HAMER Line Blind Valves

Built for strength and durability, HAMER LINE BLIND VALVES are the modern means of blinding pipe lines quickly and effectively. A one-man, one-minute operation. Cuts costs, and speeds up operations.



Send for FREE Catalog

HAMER VALVES, INC.

2919 Gardenia Avenue
Long Beach 6, California

Representatives throughout to United States

With more than 25,000 lubrication points in just one dept., plant has —

*no
bearing
failures*



Bushing above was removed from an end pulley after one week of service with conventional cup grease. Bushing at left had been in service for over one year using Alvania lithium-base grease, which gives the appearance of just having been applied

cavity by centrifugal force. Grease then separated into oil and a hard soap curd. Oil in turn was thrown out, with subsequent bearing failure. Although lubrication intervals were set at six months, actual time between greasing was closer to six weeks.

With more than 25,000 lubrication points in just one department of the plant, it is imperative that lubrication standards be high. For several years, Industrial Rayon engineers have engaged in a program of research and development designed to minimize machine failures due to faulty lubrication.

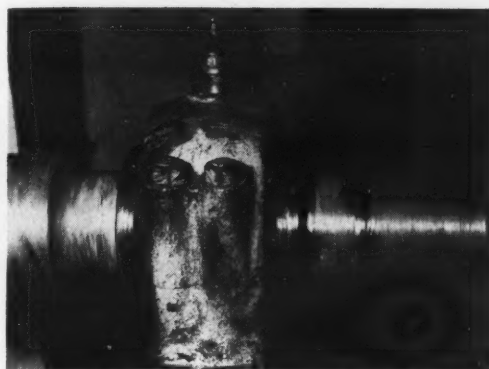
Improved performance results since Industrial Rayon Corp. switched to lithium-base grease, saving \$5000 to \$10,000/yr

Problem: Conventional calcium or cup grease, requiring a certain water content to assure stability, was not doing a good lubricating job on drive and idler pulleys and other machinery at Industrial Rayon Corporation's Painesville, Ohio plant. Operating conditions of pulleys caused water in the lubricant to be lost from the grease

Specifications for Alvania # 2

Color	light amber
Texture	smooth
Soap (kind)	lithium 12-hydroxy
Soap (%)	7.9
Drop Point ASTM (°F, min)	360
Mineral Oil (kind)	solvent coastal
Mineral Oil (SUS @ 100°F)	475/525
Consistency ASTM	
unworked	288
worked 180 strokes	272
worked 10,000 strokes	290
worked 1,000,000 strokes	322

When inquiring check CP 1857 on handy form, pgs. 2-3



This drive side bearing of a 125,000 cfm ventilating fan has been in service since November 1950 — with no bearing trouble of any kind

Solution: In 1950, based on engineers studies, use of lithium 12-hydroxy grease was started.

Results: No bearing failures have been experienced at Industrial Rayon since they switched to Alvania # 2 lithium-base grease. In addition, intervals between greasing have been increased to six months and will probably be extended to a year. Test pulleys have run as long as two years without attention.

Evidence points to considerable savings realized from use of this lubricant. With reduced lubricant consumption and minimizing of bearing failures, Industrial Rayon counts between \$5000 and \$10,000 per year saved. If increased availability of rayon production machinery were considered, the figures would be much greater.

(Alvania #2 lithium-base grease is a product of Shell Oil Co., Dept. CP, 50 W. 50th St., New York 20, N. Y. . . or for more information check CP 1858 on handy form, pages 2 and 3.)

Wide selection of shapes, sizes available in woven heaters

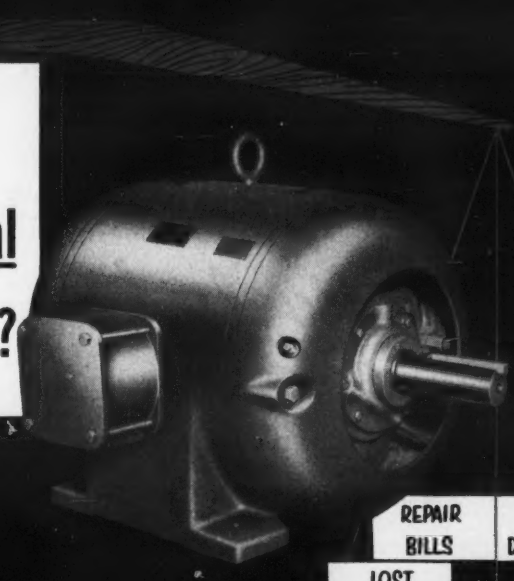
Typical uses are illustrated and application data are given in folder covering line of woven electric heaters. Products described are distinguished by light weight, thinness, pliability, quick heat-up and cool-off. They deliver heat with uniformity over large areas. Temperatures are accurately maintained because of responsiveness of heaters to thermostatic controls.

Units are custom-made and permit selection of shapes, sizes and ratings.

Folder F-1548 is issued by Pre-Fab Heater Company, Dept. CP, Gilford, Conn. When inquiring specify CP 1859 on handy form, pages 2 and 3.

How do you weigh the actual cost of a motor?

**PURCHASE
PRICE**



REPAIR BILLS	LATE DELIVERIES
LOST MAN HOURS	LOST PRODUCTION

Keep costs down...choose Wagner® Motors

The selection of the right motor for every specific industrial application is all important. Due consideration must be given to motor type, rating, slip, torque values, and other operating characteristics.

But, because the ultimate cost is the actual cost of a motor . . . alert buyers look beyond such specifications. They look for other factors, such as cool operation, with consequent longer insulation life . . . and they consider the *time-tested proven dependability* of the brand of motor they specify. They know that it's costly to take chances with motor drives.

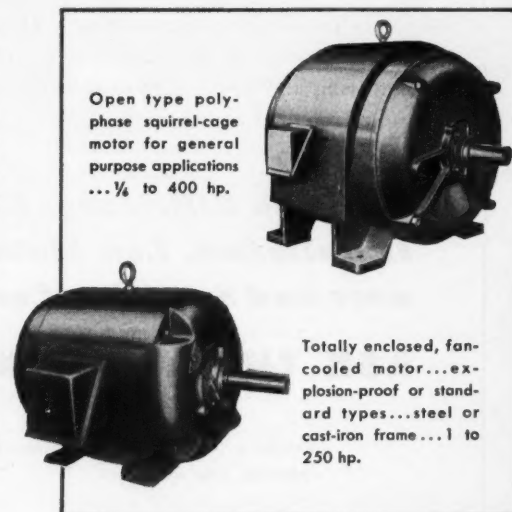
Wagner Motors have been proving their reliability for more than sixty years. Many thousands of users throughout industry have found them a lasting investment in continuous troublefree performance.

The wide range of types and sizes in Wagner's complete line permits the selection of a standard motor for almost any need. Bulletin MU-185 gives full information.

Your nearby Wagner engineer will be glad to help you select the *right* motors for your next application. Call the nearest of our 32 branch offices, or write us.



H54-17



Open type poly-phase squirrel-cage motor for general purpose applications . . . 1/4 to 400 hp.

Totally enclosed, fan-cooled motor . . . explosion-proof or standard types . . . steel or cast-iron frame . . . 1 to 250 hp.

WAGNER ELECTRIC CORPORATION
6359 PLYMOUTH AVE., ST. LOUIS 14, MO., U.S.A.

BRANCHES AND DISTRIBUTORS IN ALL PRINCIPAL CITIES

ELECTRIC MOTORS
TRANSFORMERS
INDUSTRIAL BRAKES
AUTOMOTIVE
BRAKE SYSTEMS—
AIR AND HYDRAULIC

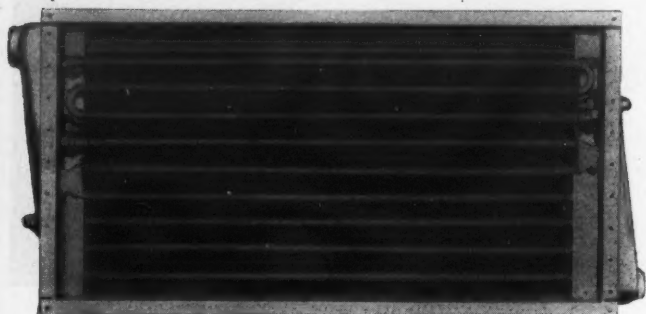
When inquiring check CP 1860 on handy form, pgs. 2-3

We Make

Extended-Surface

HEAT EXCHANGERS

Exclusively!



The pioneer in the field, Aero-fin has concentrated on one thing, and one thing only — highly efficient, easily installed, easily maintained extended-surface heat exchangers. Aero-fin's design, research, engineering and production experience and facilities are unequalled anywhere.

For High Efficiency, Easy Installation, Low Maintenance and Servicing Costs . . .

ASK THE AEROFIN MAN

Aero-fin is sold only by manufacturers of fan system apparatus. List on request.

AEROFIN CORPORATION

101 Greenway Ave.
Syracuse 1, N. Y.

When inquiring check CP 1861 on handy form, pgs. 2-3

MAINTENANCE

Larger capacity is result of better construction on tensioning drive . . .

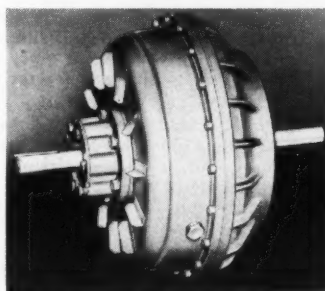
eliminates problems involving rough and uneven operation

Uses: On winding and tensioning equipment for textile materials, coated paper, steel strip, cellophane, fiber glass, gasket material, plastic pipe, artificial leather, rubber, wire, and foil.

Features: Capacity of unit has been increased. Improved construction includes rearrangement of gear train, better bearing spacing, and a carbon-against-Meehanite spring-loaded seal.

Automatic winding and tensioning control eliminates problems involving rough and uneven operation, by maintaining predetermined tension without intermittent adjustment.

Description: Hydro-Wynd, Models 12.2 and 8.4, incorporates a fluid coupling and a planetary gear set. Ring gear is connected to impeller, or pump, of fluid coupling. Planet gear carrier is fixed to turbine, or runner, of fluid coupling, and sun gear is integral with output shaft.



Drive automatically maintains predetermined tension

To mastermind operation, automatic "slip" of fluid coupling within unit reacts with planetary gear set — transmitting increased torque necessary to maintain desired tension, while roll rpm decreases and roll diameter increases.

(Winding and tensioning drives are a product of Twin Disc Clutch Co., Dept. CP, 1328 Racine St., Racine, Wis. . . . or for more information reader may simply check CP 1862 on the convenient Reader Service slip which is located between pages two and three.)

POWER PACKAGES

*Low Cost
Portable
Hydraulic*



Model S-440 (illustrated) measures 12"x12"x24"; weighs 45 lbs. Contains air-operated pump, air muffler, air filter, air lubricator, air regulator, valves and gages and all necessary equipment for immediate operation.

Make just three connections and you are ready to boost 100 psi. plant supplied air pressure to 10,000 psi. fluid pressure for \$278.25 (FOB Gardena, Calif.). Eight standard models for output fluid pressures of 1,000 to 30,000 psi. Special models for lower or higher pressures.

Applicable wherever low volume output at high pressures is the requirement. For oil or water service. Thousands in use. Send for bulletin No. 500.

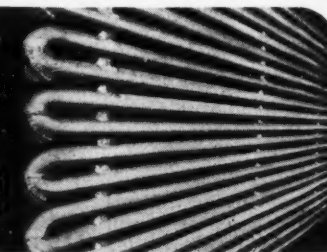
SPRAGUE

Engineering and Sales Corp.

1144 WEST 135TH ST., GARDENA, CALIF.

When inquiring check CP 1863 on handy form, pgs. 2-3

**NEARLY
\$1000
SAVED!**

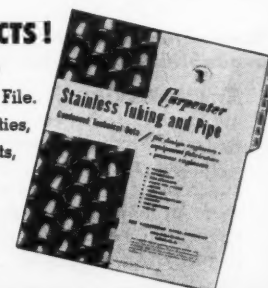


... and Carpenter Stainless Tubing made the difference.

FOR PRODUCTION EQUIPMENT—ten cooling coils like this were made from Carpenter Stainless Tubing at a saving in material of about \$1000 because uniform walls permitted a lighter gauge.

GET THESE NEW FACTS!

Just off the press is the new Carpenter Condensed Data File. Packed with facts on properties, corrosion resistance, weights, dimensions. Tells the story of Carpenter quality—Carpenter uniformity. Write for your copy, today.



THE CARPENTER STEEL COMPANY
Alloy Tube Division, Union, New Jersey

When inquiring check CP 1864 on handy form, pgs. 2-3

CHEMICAL PROCESSING

**With displacement of 172 cu in,
industrial engine develops
61 brake hp at 2800 rpm . . .**

unit requires less gas, which means greater economy in many industrial applications

Uses: For a variety of industrial applications.

Features: With 172 cu in of displacement, this four-cylinder engine develops 61 brake hp at 2800 rpm. Less displacement normally requires less gas, which means greater operating economy.

Description: Large 3.90 inch bore of engine is combined with a short 3.60 inch stroke to cut piston travel, friction, and fuel costs. A deep-skirt crankcase provides greater rigidity, and precision molded alloy iron crankshaft is fully balanced in motion before installation in engine. Shaft has mirror-polished bearing surfaces to reduce friction to a minimum.

Free-turn intake and exhaust valves (overhead) permit even wear, and help maintain high compression for a longer than average time, as well as reducing possibility of sticking. Ignition and distributor are sealed against moisture and dust. Engine has a full-flow oil filter with full-pressure lubrication.

Pistons are produced from cam-ground aluminum alloy castings with steel struts for controlled piston-to-sleeve clearance. Full length water jackets surround each cylinder to maintain uniform temperature and minimize bore distortion and wear. A full-lubricated variable speed governor is mounted on crankshaft as an integral part of unit.

(Industrial Engine, designated "172", is a product of Ford Div., Ford Motor Co., Dept. CP, P. O. Box 638, Dearborn, Michigan . . . or for more information check CP 1865 on handy form, pages 2 and 3.)

As you read CP —

When You Want More Information

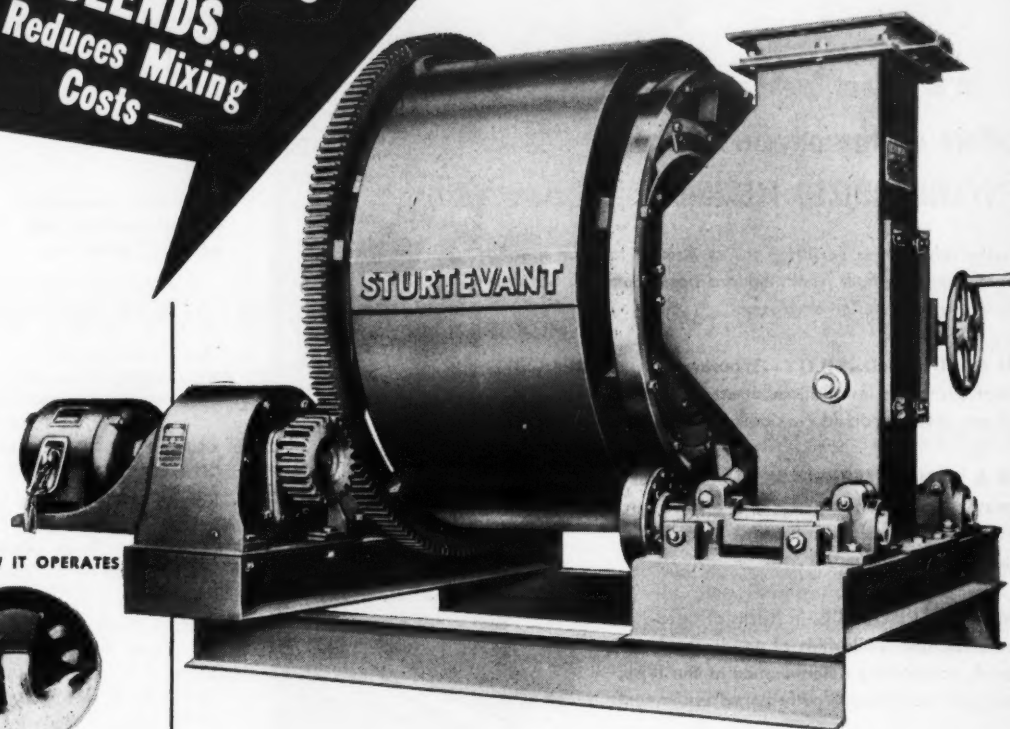
. . . on some product or service discussed, look for the name of manufacturer or supplier, with address . . . at end of editorial article

The information in our "source" paragraph is put there by the editors for your convenience and use when you want further details on ideas or developments discussed in the story. (Did you wonder, "Is this some sort of advertising?") A letter to the given manufacturer . . . or a check on the handy Reader Service slip . . . will bring you the added information you want. This idea was pioneered in the chemical field by Putman Publishing Company many years ago . . . to help busy men like you!

THE EDITORS

**4 WAY
MIXING ACTION
PRODUCES
HOMOGENEOUS
BLENDS...
Reduces Mixing
Costs —**

with the STURTEVANT BLENDER



HERE'S HOW IT OPERATES



RECEIVING

As the materials are received, they are picked up by scoops and cascaded from the top of the machine. At the same time, the revolving drum forces the materials from both ends toward the center of the drum . . . while the swinging chute, which is in mixing position, produces a fourth lateral mixing action.



DISCHARGING

By simply throwing a lever, the inlet is closed and the blender is in discharging position. The completely mixed materials drop off the lifting scoops and discharge through chute without segregation of ingredients.

Four separate mixing actions in the Sturtevant Blender assure complete blending of various materials regardless of weights, densities, finenesses, or other physical properties.

This mixing action provides a thoroughly blended product with no substances floating to remain unmixed.

Sturtevant Blenders are available in mixing capacities from 500 to 20,000 pounds. Write for information or engineering assistance.

STURTEVANT MILL COMPANY

119 CLAYTON STREET, BOSTON 22, MASSACHUSETTS

Designers and Manufacturers of

CRUSHERS • GRINDERS • SEPARATORS • CONVEYORS • MECHANICAL DENS
and EXCAVATORS • ELEVATORS • MIXERS

When inquiring check CP 1866 on handy form, pgs. 2-3

Custom Built
at competitive cost
of standard equipment

M & L Heat Exchange Equipment offers all the advantages of "STANDARDIZED FLEXIBILITY"

—the advantages of fitting the equipment to your specific needs—custom built from standard basic elements. Saves time, cost and design drudgery.

M & L DEPENDABILITY—Thousands of successful heat exchange installations attest to the dependability of our "Standardized Flexibility".

M & L ENGINEERING SKILL compasses visual imagination, common sense and a full interpretation of your needs. Results are clearly, logically, quickly accomplished.

M & L EXPERIENCE, in stacks of case histories, and similarities of needs, leads to a quick, satisfactory determination of the type, size and construction of required equipment.

M & L ECONOMY—A combination of all these advantages adds up to real savings in initial as well as operational costs.

You can rely on
M & L EQUIPMENT

Inquires are invited.
There's a bulletin for every chemical processing and heat exchange equipment need.

Manning & Lewis
Engineering Company

30 Ogden Street Newark 4, New Jersey
SALES REPRESENTATIVES IN PRINCIPAL CITIES



When inquiring check CP 1867 on handy form, pgs. 2-3

MAINTENANCE

Illustrates worm gear drive applications

Company's worm gear speed reducers in designs to meet special drive requirements are extensively illustrated in folder. Units shown range from those used to raise and lower heavily loaded platforms to those for powering overhead conveyor drives.

"It's Your Move to Win" is available from The Cleveland Worm & Gear Co., Dept. CP, 3290 East 80th Street, Cleveland 4, Ohio. When inquiring specify CP 1868 on handy form, pages 2 and 3.

Line of circulators completed by unit of 2 1/2" size . . .

capacities to 125 gpm, heads to 14' given by pump

With addition of 2 1/2" circulator, company offers a complete line of horizontal circulators from 3/4" up to and including four sizes of 3" units. All sizes are available in bronze as well as cast iron.

Recent 2 1/2" addition to line gives heads to 14' and has capacities to 125 gpm. It is operated by 1/4 hp, 115v, 60 cy AC motor — 1725 rpm.

(HC25 2 1/2" circulator is a product of Taco Heaters, Incorporated, Dept. CP, 137 South St., Providence 3, R. I. . . or check CP 1869, pages 2 and 3.)

Shows DC equipment for electroplating

Line of DC electrical equipment for use in electroplating processes is pictured and described in four-page bulletin. Line includes DC generators, rectifiers, PR controllers, tank rheostats, and special panels. Respective characteristics of generators and rectifiers are listed side by side. Controllers for other DC applications are also briefly noted.

Bul DC-100 is issued by Hanson-VanWinkle-Munning Co., Dept. CP, 100 Church St., Matawan, N. J. Specify CP 1870, pages 2 and 3.

Steam Jacketed Valves that keep Viscous Materials flowing freely

These valves protect you from clogging troubles when handling coal tar products, asphalts, resins, waxes, molten sulfur, varnish and other materials which congeal at ordinary temperatures.

Their exclusive design includes jacket space around ports as well as body, straight-through flow, quick-acting lever, non-wedging mechanism, self-grinding discs, and lasting tightness.



Available in 2-in., 3-in., and 4-in. sizes for 125 psi line and jacket pressures.

Write for full information.

EV 222

EVERLASTING VALVE CO., 73 Risk Street, Jersey City 5, N. J.
Trade Mark "EVERLASTING" Reg. U. S. Pat. Off.

Everlasting Valves for everlasting protection

When inquiring check CP 1871 on handy form, pgs. 2-3

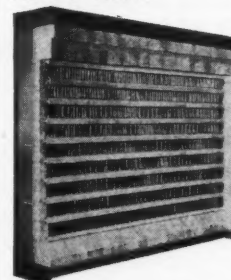
A RADIANT HEAT SOURCE, Easily Installed

"FOLDED-and-FORMED" Heating Elements

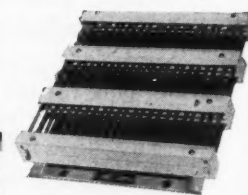
are quickly, easily installed in furnaces, ovens, kettles, etc., to assure a heat source unequalled for quick rise to temperature; long-life efficiency; low-cost maintenance and repairs.

STANDARD RACKS

Size 12" x 12". Installed vertically or horizontally, side-by-side, end-to-end, or in banks, to meet K. W. requirements. Five-year guarantee, at temperatures to 750°F. or 1350°F.



Hundreds of different applications are demonstrating the outstanding efficiency and economy of "F-and-F" Heating Elements. You, too, can use them profitably!



CUSTOMBUILT RACKS

Available in wide range of sizes and combinations, to fit any flat or curved area, to provide maximum K. W. at temperatures to 1850°F.



Electrically Heated Industrial Equipment
235 LEVERINGTON AVE. PHILA. 27, PA.

When inquiring check CP 1872 on handy form, pgs. 2-3

CHEMICAL PROCESSING

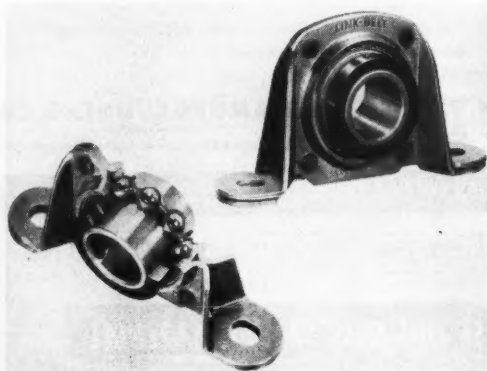
**Smooth operation, long life assured
by self-aligning design feature
of ball bearing pillow blocks . . .**

free-rolling action, full load capacity remains, even with minor shaft deflection

Uses: For applications where speeds are relatively low and loads are light.

Features: A precision deep-groove single-row ball bearing, self-aligning in all directions, assures smooth operation and long life. Free-rolling action and full load capacity are maintained, even with minor shaft deflection or normal misalignment. A long inner ring distributes load evenly over a large shaft area.

Description: Ball bearing pillow blocks, Series JPS 200, are available for shafts from $\frac{3}{8}$ to $1\frac{1}{4}$ " in diameter. They are easily installed by slipping inner ring onto a shaft and locking it into position. Slotted bolt holes permit easy lateral adjustment.



Pillow blocks are available for shafts from $\frac{3}{8}$ to $1\frac{1}{4}$ " diameter

A synthetic rubber lip seal, integral with bearing, provides maximum sealing efficiency to retain lubricant and to exclude dirt — even in extremely dusty and dirty locations. No further lubrication is necessary. Bearings are lubricated for life.

(Ball bearing pillow blocks are a product of Link Belt Co., Dept. CP, 307 N. Michigan Ave., Chicago 1, Ill. . . or for more information check CP 1873 on handy form, pages 2 and 3.)

**Gives helpful information
on washer selection**

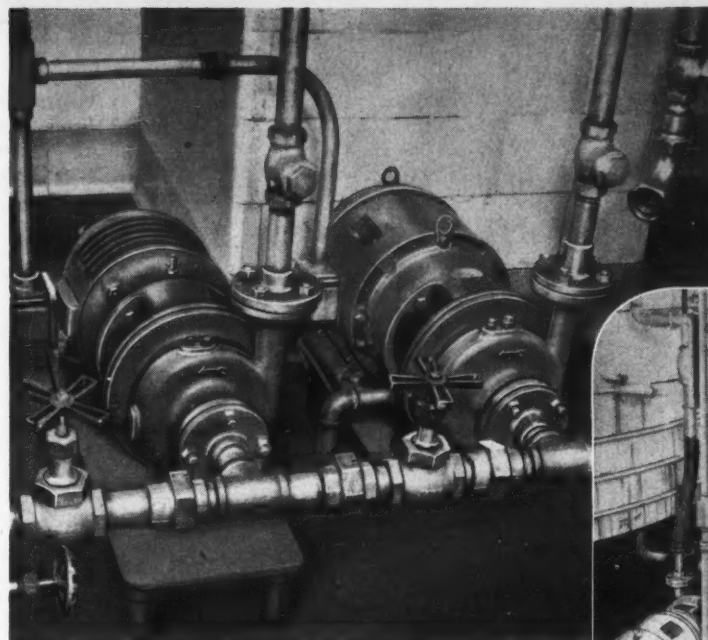
Helpful information and pictures on manufacture and availability of metal and fiber washers, both standard and special, are contained in 16-page booklet. Useful data on general washer characteristics and tolerances are presented. Standard washer sizes are listed. Existing die sizes for production of more than 30,000 washers are given.

Booklet on how to obtain the right washer for your job is issued by H. K. Metal Craft Manufacturing Co., Dept. CP, 3775 Tenth Ave., New York 34, N. Y.

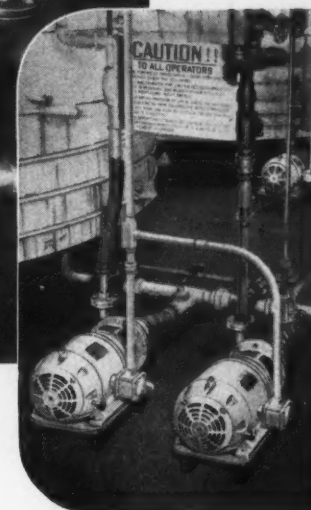
Ampco Centrifugal Pumps, made of Illium "G", pumping vinegar to automatic measuring devices in the Mayonnaise and Miracle Whip Processing Dept., Kraft Foods Co., Chicago, Illinois.

Ampco Pumps are available in most workable alloys. When made from corrosion- and wear-resistant Ampco Metal, they give you all the advantages of a special pump at standard pump prices.

Illium "G" is the registered trademark of the Illium Corp.



Ampco Pumps handling vinegar from tank cars to storage, Kraft Foods Co., Chicago.



Seven reasons why Kraft Foods Co.

uses . . . **AMPCO** Centrifugal Pumps

- 1 Good corrosion-resistance
- 2 Low capital investment
- 3 No metal-to-metal contact
- 4 High efficiency
- 5 Constant rate of flow
- 6 Durable seals that resist wear — are easy to replace
- 7 Small space requirements

KRAFT uses corrosion-resistant Ampco Centrifugal Pumps to handle the vinegar used in the production of its mayonnaise and salad dressing. These pumps give a dependable flow rate . . . freedom from contamination . . . greater dependability . . . less downtime.

Moreover, Ampco Pumps are used throughout industry for difficult liquid-handling problems. They represent pump design at its best — both hydraulic and mechanical. They save power — have wide performance range, good characteristics, high efficiencies (up to 85%). They save money — you get a special pump at a standard pump price. They're built of Ampco Metal — the special alloys that make good where other metals fail. That's why they're unusually resistant to wear, corrosion, erosion,

cavitation-pitting, and deformation. That's why you get a pump that will successfully handle abrasive solids in suspension or viscous liquids.

Best of all, Ampco Pumps are production-built, competitively-priced in a wide range of sizes. You can get them not only in Ampco Metal, but also in Illium "G" or other workable alloys to meet the requirements of unusual jobs.

Put these standard units to work for you — give them the tough jobs that formerly required high-priced special pumps. Take advantage of low-cost, long-life, headache-free pumping. Check with your nearby Ampco distributor or write us for the solution to your difficult fluid-handling problems. *Reg. U. S. Pat. Off.

Clip this coupon to a postcard and mail today.

AMPCO METAL, INC., Dept. CP-8, Milwaukee 46, Wisconsin

☐ I'm interested in Ampco Centrifugal Pumps. Send me bulletin No. P-3a.

☐ I'd like to know more about Ampco Metal for use in process industries. Send me more information.

Name.....Title.....

Company.....

Company Address.....

City.....(.....) State.....

PR-14A

Ampco Metal, Inc.

MILWAUKEE 46, WISCONSIN

WEST COAST PLANT,
BURBANK, CALIFORNIA

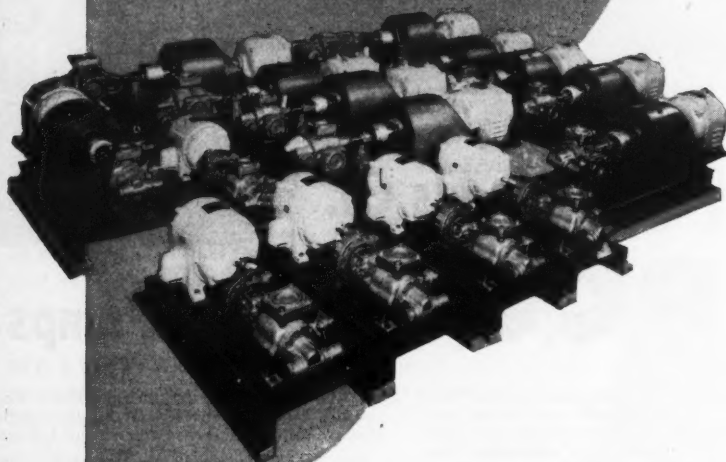


LET AMPCO PROVE ITS METAL

When inquiring check CP 1874 on handy form, pgs. 2-3

ROPER

fills a
BIG ORDER...
for a
BIG PROCESSING INSTALLATION



Big order, yes! And the BIG factor that prompted the selection of the fifteen Roper Series 3600 Pumps shown was *dependability*.

Dependability as only painstaking engineering, quality components, and accurate assembly can bring.

Dependability that serves your interests on both long and short runs whether handling thick or thin liquids.

Roper Series 3600 Pumps feature hardened helical gears running in axial hydraulic balance, high lead bronze bearings, split ring packings and split gland, and adjustable relief valve... are made in 40 to 300 G.P.M. sizes — pressures to 60 P.S.I. Send today for Catalog 953 giving complete data on Roper pumps, or see your Roper distributor.



GEO. D. ROPER CORPORATION
748 BLACKHAWK PARK AVENUE, ROCKFORD, ILLINOIS

When inquiring check CP 1875 on handy form, pgs. 2-3

MAINTENANCE

Vents air 8 times faster than inverted bucket steam traps...

enables faster heating, lower steam consumption

Uses: For steam trap applications on steam-consuming units.

Features: Steam trap is reported on the basis of tests to vent air out of steam-consuming units eight times faster than inverted bucket traps, and three times faster than air eliminator or blast-type traps. This enables faster heating, more production, lower steam consumption, longer trap life, and a reduction in trap capacity.

Description: Heat-Kwik Super-Silvertop steam trap is able to accomplish fast air-venting through use of two separate orifices, one for condensate and a separate bellows orifice for air.

When trap is cold, bellows orifice is wide open and handles large quantities of air rapidly. After all of air is removed through it, bellows expands and closes orifice. Thereafter, air is removed through vent hole in bucket. Since very little air remains in system, vent hole is said to be of ample capacity for normal operations.



Steam trap has two orifices, one for condensate and one for air



The all new Oster "Featherweight Champ", a Power Drive for Hand Pipe Tools, weighs only 80 pounds. One man can move it and use it with ease... yet the "Featherweight Champ" is exceptionally sturdy and powerful. Ideal for "on the spot" threading, its range is 1/4" to 2", and it is available with either electric or gasoline power.

For the full story on the "Featherweight Champ" see your local Oster Distributor.

THE OSTER MANUFACTURING CO.
Main Office and Factory:
2032 East 61st St. • Cleveland 3, Ohio

Builders of Cost Reducing Threading Equipment Since 1893

When inquiring check CP 1876 on handy form, pgs. 2-3

**USE THIS NEW SAFETY MATERIAL
ALL OVER
YOUR
PLANT**

Work platforms



Flooring



Gutter Covers



Partitions



Safety

GRIP-STRUT

NON-SKID—RUGGED—LOW COST

Safety Grip-Strut is a new basic material. All one piece, steel or aluminum, in various sizes and gauges. Sold like lumber, used like lumber and stocked in your storeroom like lumber. Ideal for on-the-job fabricating. Not welded, riveted or expanded. It presents an open space, in a diamond shaped pattern, in excess of 75% of the area for ready access of light and air and gives a positive NON-SKID footing in all directions. Ideal for stair treads, fire escapes, cable trays, work platforms, catwalks, flooring and for original equipment safety treads. Your own mechanics can install it—it's inexpensive, yet permanent and safe. Write today for new catalog showing loadings and methods of easy application in your plant.

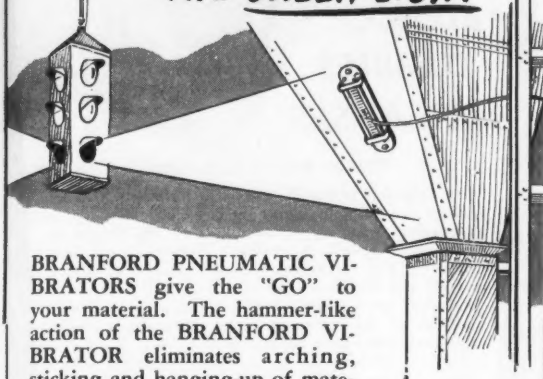
Distributors in all principal cities.

**GRIP-STRUT division
THE GLOBE COMPANY**
Manufacturers since 1914
4006 S. Princeton Ave. • Chicago 9, Ill.

When inquiring check CP 1877 on handy form, pgs. 2-3

CHEMICAL PROCESSING

BRANFORD GIVES MATERIALS THE GREEN LIGHT

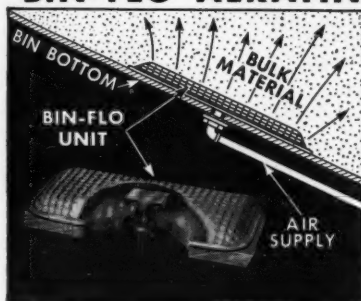


BRANFORD PNEUMATIC VIBRATORS give the "GO" to your material. The hammer-like action of the BRANFORD VIBRATOR eliminates arching, sticking and hanging-up of materials. Production is speeded up because poking and sledging are not necessary. BRANFORD pioneered the pneumatic vibrator. BRANFORD Engineering "Know-How" is available to help you solve your problems in the effective use of vibration.

THE BRANFORD COMPANY
continuing New Haven Vibrator Company
147 CHESTNUT STREET, NEW HAVEN, CONN.

When inquiring check CP 1878 on handy form, pgs. 2-3

BIN-FLO AERATING UNIT

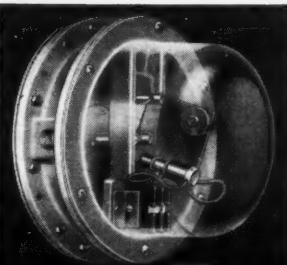


Provides Steady Flow of Dry, Finely Ground Materials which tend to bridge in storage. Uses only small amount low-pressure air.

BIN-DICATOR BIN LEVEL INDICATOR

For All Bulk Materials

signals change in level; automatically starts and stops filling and emptying equipment.



THE BIN-DICATOR CO.

13946-D Kercheval • Detroit 15, Mich.

NEW
DETAIL DATA
BOOK
FREE

When inquiring check CP 1879 on handy form, pgs. 2-3

AUGUST, 1954

MAINTENANCE

These steam traps require a trap factor of never more than 2 to 1. Due to construction of head of trap, it may be opened for inspection or servicing without removal from pipeline.

Traps have inverted bucket guided on a hexagonal tube. This prevents bucket from being damaged on side of case, and also keeps valve and seat in line. All working parts of trap are made of heat-treated stainless steel with exception of valve and seat which are made of Anderloy — a chrome-nickel alloy developed to resist corrosive action of steam and water.

Steam traps are available in sizes from $\frac{3}{4}$ to $1\frac{1}{4}$ ", suitable for pressures up to 150 psi.

(Steam traps are a product of Dept. H, The V. D. Anderson Co., Dept. CP, 1935 West 96th St., Cleveland 2, Ohio . . . or for more information check CP 1880 on handy form, pages 2 and 3.)

Spring-loaded belt face holds correct tension in drive's range

Uses: For variable-speed drive applications.

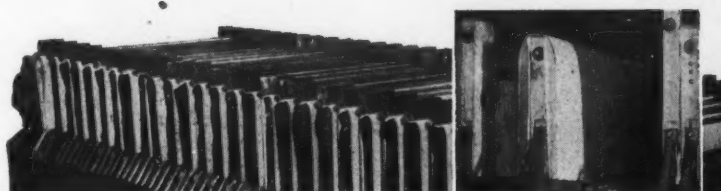
Features: Drive has spring-loaded belt face which maintains correct belt tension in all speed positions. Design assures full load-carrying capacity throughout speed range of 9 to 1.

Description: Variable-speed drive, both Models 4100 and 6100, is of countershaft design, which varies speed by changing its location between two fixed sheaves. Standard V-belts are used in both 4", $\frac{3}{4}$ hp and 6", $1\frac{1}{2}$ hp standard sizes.

Hand control in drive is located away from belts and other moving parts for greater safety. Control adjusts speed by swinging countershaft in an arc around its base. It also moves sheave positively along its axis to maintain belt alignment in both horizontal and vertical shaft applications.

(Variable-speed drive is a product of Speed Selector Inc., Dept. CP, 118-U Noble Court, Cleveland 13, Ohio. . . or for more information reader may simply check CP 1881 on handy form, pages two and three.)

No magic in cutting filtration costs...

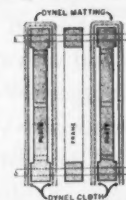


Flaherty Filter Fabric and Matting at Wilson Organic Chemicals, Inc.

The economy of DYNEL fabrics and matting is a matter of fact!

THE FACT IS: Dressing filter press plates with DYNEL filter cloth and covering with DYNEL matting reduces press plate leakage and prevents rim cutting.

The new DYNEL matting acts as an efficient gasket. Because leakage is reduced drastically, full operating pressure can be built up quickly — no waiting for cake build-up. In addition, one cloth and one mat cost less than two cloths. Time to get press back into operation after cleaning or redressing is cut to a minimum.



Only DYNEL Fabrics and Mattings give you all these advantages!

- Unaffected by most chemicals
- Keep their size and shape
- High strength—wet or dry
- Mildewproof

Investigate DYNEL today!

Run samples of DYNEL filter fabrics — or mats — under the specific conditions in your plant. Write on your company letterhead for list of manufacturers. Address:

Textile Fibers Dept. P-1, Carbide and Carbon Chemicals Company
A Division of Union Carbide and Carbon Corporation UCC
30 East 42nd Street, New York 17, New York

20-hour immersion tests demonstrate DYNEL's chemical resistance

Tests made on 57 different chemicals, including acids, bases, oxidizing agents and solvents, after 20-hour immersion periods are summarized in a handy leaflet. Write for your copy.

Economy will tell... it's

DYNEL

When inquiring check CP 1882 on handy form, pgs. 2-3



NIAGARA AERO HEAT EXCHANGERS give sustained full capacity in cooling and condensing with no dependence on cooling water... eliminating the problems of water supply, availability, temperature, or quality.

Niagara Aero Heat Exchangers at a Plant of the Heyden Chemical Corp.

Still Operations Improved by a New Cooling Method

• **NIAGARA AERO HEAT EXCHANGERS** cool the reflux supply or condense vapors at a vacuum by controlled evaporation of water directly on the heat exchange surfaces.

Liquid or vapor temperatures are always held constant by the Niagara "Balanced Wet Bulb" control method, which automatically varies the cooling effect proportionately to the load. The distillation is therefore uniform throughout all changes in climatic conditions the year around; it is the same in the heat of summer as in the freezing cold of winter. Continuous maximum production is thus insured.

Non-condensibles are effectively separated at the condensate outlet, with notable sub-cooling after separation for greater vacuum pump efficiency.

Use of Niagara Aero Heat Exchangers reduces your operating costs and removes many sources of your troubles in distillation column operation. Ask for new bulletin #120.

NIAGARA BLOWER COMPANY

Over 35 Years Service in Industrial Air Engineering

Dept. CP, 405 Lexington Ave.

New York 17, N. Y.

Experienced District Engineers in all Principal Cities of U. S. and Canada

When inquiring check CP 1883 on handy form, pgs. 2-3

MAINTENANCE

Shows principal uses of polyethylene

Information about molding, extruding, and other ways to use company's polyethylene is presented in eight-page folder. Photographs showing principal applications of material for packaging, wire covering, pipe, and industrial products are included.

Three tables list properties of various polyethylene resins available in commercial and experimental quantities. Also listed are properties of compounds that are blended with suitable colorants and anti-oxidants and made available as molding, extrusion and electrical compounds.

Folder GA is issued by Bakelite Company, Division of Union Carbide and Carbon Corporation, Dept. CP, 300 Madison Avenue, New York 17, N. Y. When inquiring specify CP 1884 on handy form, pages two and three.

Severest industrial traffic withstood by rolled steel plate flooring . . .

concrete "islands" give safe, quiet traction pattern

Uses: For application where protection is needed against heavy industrial traffic, as well as in those industries where completely sanitary conditions are necessary.

Features: Heavy-gage rolled steel plates provide a hard abrasion-resistant surface to stand up under severest kind of industrial use. Buckling, curling, cracking, and noise, characteristic of many metal floors, are completely eliminated.

Description: Each plate, embedded in concrete, is held firmly in place with twenty-five anchors in each square foot and twenty-eight edge anchors to prevent movement in either a vertical or horizontal direction.

Another advantage of Ancor floor is combination of 31 smooth concrete islands per square foot. These islands provide a safe, quiet traction pattern in a flat surface and eliminate need for corrugations or embossing, which cause a clattering noise, often lead to spillage.

MORSE DeLUXE 500 Portable ROTATOR

- MIXES
- BLENDS
- TUMBLES
- CLEANSSES



Faster and at less cost!

The patented Morse De Luxe 500 Rotator will handle 1 to 55 gal. containers, weighing to 500 lb. They revolve safely, smoothly, efficiently at 10, 20, 40 rpm on this powerful, compact, portable, motorized unit. Cuts cost of mixing, blending, tumbling, cleansing. Easily moved and loaded by one man. Has 3/4" dia. power driveshaft with self-aligning ball bearings. Four adjustable 4" dia. Neoprene-tread drive wheels. Fully enclosed worm-gear drive with 30-1, 15-1, 7 1/2-1 reductions. Weighs 137 lb. Delivered complete with motor, drive mechanism and tipping lever. Write for Bul. #1053 and catalog, showing full Morse line of Drum and Barrel handling equipment.

MORSE MANUFACTURING CO. INC.

737 West Manlius St. East Syracuse, N. Y.

When inquiring check CP 1885 on handy form, pgs. 2-3

• FOR GAUGING LIQUIDS OF ALL KINDS

• 100% AUTOMATIC

• APPROVED BY UNDERWRITERS' LABORATORIES

"LIQUIDS WORTH STORING ARE WORTH MEASURING" WITH A LIQUIDOMETER Tank Gauge

WRITE FOR COMPLETE DETAILS

THE LIQUIDOMETER CORP.

38-18 SKILLMAN AVE., LONG ISLAND CITY, I.N.Y.

When inquiring check CP 1886 on handy form, pgs. 2-3

CHEMICAL PROCESSING

MAINTENANCE



Anchors hold plate firmly in place in concrete

Plates are easily installed over sound wood floors, new or old concrete, or in place of worn brick or wood blocks, faulty metal plates or sheets.

(Steel flooring is a product of Flash-Stone Co., Inc., Dept. CP, 3723 Pulaski Ave., Philadelphia 40, Pa. . . . or for more information check CP 1887 on handy form, pages 2 and 3.)

Presents motion study of spray gun use

Description of procedure in spraying various surfaces which are encountered in production spraying operations is included in spray gun motion study booklet. Literature points out that a continuity of motion in painting an article is an important element in increasing efficiency of the spraying operation.

It is emphasized that continuous motion should not be misinterpreted to mean that spray gun must remain open throughout operation. Correct triggering of gun not only saves material, but it also reduces excessive overspray which can ruin a finish. Theme of booklet is high quality finishes at a minimum cost with less fatigue.

"Spray Gun Motion Study" is available from the DeVilbiss Co., Dept. CP, 300 Phillips Ave., Toledo 1, Ohio. When inquiring specify CP 1888 on handy form, pages 2 and 3.

For more information on product at right, specify CP 1889 . . . see information request blank between pages 2 - 3.



Here's another
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improvement
from Standard Oil

NEW STANOLITH GREASE

A new grease! White and clean in appearance,
STANOLITH Grease White is the perfect
grease for use in food and beverage plants.

Specially recommended for bakeries, breweries, candy factories, canning and cereal plants, chemical processing plants, dairies, distilleries, meat processors — all industries where clean, sanitary operating conditions are at a premium.

● STANOLITH Grease White is a new high quality, multi-purpose lithium soap grease with a clean, white color. It assures you of unmatched lubricating cleanliness plus unmatched lubricating efficiency.

In addition to the high-temperature and water resistant properties, characteristic of most lithium greases, STANOLITH Grease White has superior mechanical and chemical stability. It provides a water-resistant lubricating film that gives this remarkable grease extended multi-purpose usage in a wide variety of applications. Easily handled in all usual types of grease-dispensing equipment, it is safe, easy-to-use, clean. Call your nearby Standard Oil lubrication specialist for full details on new STANOLITH Grease White.

STANDARD OIL COMPANY (Indiana)



Better

DAY engineered dust control includes plant survey, system layout, strategic location of equipment and efficient installation. These factors and many more are included in DAY'S engineered dust control to assure you the utmost in effectiveness and over-all economy.

DAY engineered dust control is backed by a program of constant research for greater equipment and system efficiency. For example, DAY engineers achieved an important advancement in dust filter efficiency with the development of DAY'S patented SELF-ADJUSTING BLOW RINGS for the DAY "AC" (Hersey Type) Dust Filter. These blow rings compensate for any variation in filter tubes due to changes in temperature, pressure, moisture conditions, etc. They assure perfect cleaning air contact.

5 Important DAY Advantages

- 1 DAY'S continuous Reverse Jet Cleaning permits the use of more efficient filter media which gives filtering efficiencies up to 99.99+%.
- 2 Constant air volumes are maintained.
- 3 Continuous, automatic operation without the necessity of shutting down any section for cleaning.
- 4 Air-to-cloth ratios to as high as 20 to 1.
- 5 Self-Adjusting Blow Rings assure perfect reverse air to cloth contact.

Write For New Bulletin

If you have a dust control problem, whether it involves a complete system or a single unit, your inquiry is invited. WRITE FOR BULLETIN 528-R.

The DAY Company

852 Third Ave. N.E., Minneapolis 13, Minn.
IN CANADA: P. O. Box 70Y, Ft. William, Ontario
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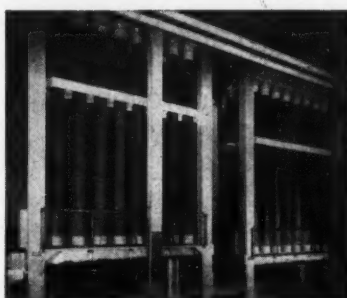


When inquiring check CP 1890 on handy form, pgs. 2-3

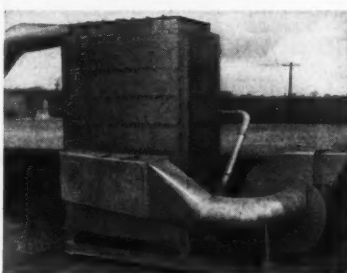
DUST CONTROL ENGINEERING IS IMPORTANT!



Photo shows two of eight DAY "AC" Dust Filters used by Chas. Pfizer & Co., Inc. The filters shown are located at the Groton, Conn. plant. DAY'S Reverse Jet Cleaning permits the use of a better grade of pressed wool felt which captures even submicron dust particles.



Two of the eleven DAY "AC" Dust Filters used by Pillsbury Mills, Inc. The filters shown are in the cake mix plant at Hamilton, Ohio. Space and headroom were at a premium in this modern, one story plant and the dust control equipment was placed to consume a minimum amount of space. Leading millers and food processors recommend DAY for dust control engineering.



DAY "AC" Dust Filter installation, Lapp Insulator Company, LeRoy, New York. The company reports—"most of our dust is very fine and varies in size from 1 micron to 25 microns. The DAY Dust Filter solved our dust problem". DAY "AC" Filters consistently provide filtering efficiencies up to 99.99+%.

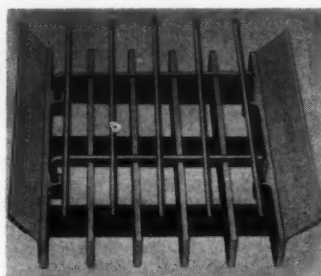
MAINTENANCE

Tramp iron particles and large debris captured

Uses: Designed to be placed in hopper throats or floor openings.

Features: Horizontal rods deflect free flowing material into streams which wipe magnetized bars. There is little chance for smallest particle of iron or steel to escape magnetic attraction. Grate is also said to prevent large debris of all kinds — papers, rags, sticks, stones — from passing through.

Description: Magnetic grate consists of a wire grid with horizontal rods placed between highly saturated Alnico No. 6 magnetized bars. They are built in sizes from 2 x 4" up to 6 or 8' square. Larger special grates of any desired size or shape can be furnished to meet unusual requirements.



Horizontal rods deflect material to magnetized bars

Grates can be placed in any opening through which free flowing materials pass, and can be readily lifted out to remove accumulated tramp iron and other debris.

(Magnetic grate separator is a product of Dept. 40, The Homer Manufacturing Co., Inc., Dept. CP, 142 E. Pearl Ave., Lima, Ohio . . . or check CP 1891 on handy form, pages 2 and 3.)

Only three working parts in small electric clutch

Small, stationary-field electric brakes and clutches for machine, instrument, and servo drives are described in six-page bulletin.

Bul 6158 is issued by Warner Electric Brake & Clutch Co., Dept. CP, Beloit, Wis. Specify CP 1892, pages 2 and 3.

NO RODDING NECESSARY!



Strahman RAM TYPE Drain Valves

The Only Drain Valve That Cannot Clog Up!

In the closed position the piston or ram extends up into the tank, preventing plugging of the outlet.

In the open position with piston fully retracted, there is no resistance to flow of materials drained from the tank.

Made in any cast metal to meet your requirements.

Designed for bolting to existing flanges. For special adaptations and for jacketed vessels, adaptor pads are available.

Full Specifications on Application

STRAHMAN VALVES, INC., 16 HUDSON STREET, NEW YORK 13, U.S.A.

When inquiring check CP 1893 on handy form, pgs. 2-3

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METALSMITHS utensils are built to the exacting needs of corrosion-resistant service in the process industries. Efficiently designed — made of correct metal analysis and weight — fabricated by latest techniques — backed by over 30 years' specialization in corrosion-resistant equipment.

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METALSMITHS

Division of Orange Roller Bearing Co., Inc.
556 White Street Orange, N. J.

When inquiring check CP 1894 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Maintenance cut to minimum by aluminum jacketing over insulation . . .

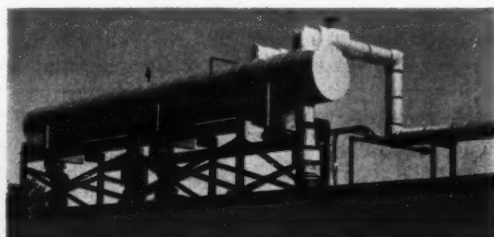
easily installed material is resistant to weather, vapor, vermin, and fire

Uses: To provide protection for insulated pipelines, boilers, tanks, and other equipment both inside the plant and outdoors.

Features: Installation is fast and easy. Since painting or any surface treatment is unnecessary, maintenance is cut to a minimum. Material is vapor, weather, vermin, and fireproof. In cleaning operations, pipelines and equipment covered with jacketing can be hosed down with rest of plant. From both a maintenance and sanitary standpoint, jacketing is of particular value in high humidity areas.

Description: Corrugated for strength, expansion and contraction, sheet aluminum jacketing is light and easy to handle. Corrugated surface also minimizes possibility of moisture entering via seams.

When used over 85% magnesia, or where wet conditions exist, a vapor proof barrier is included. For this service, a kraft paper, impregnated and coated with an asphaltic compound is employed. This paper is bonded to aluminum to facilitate handling and permits installation in one easy operation.



Jacketing has particular value in high humidity areas

On new lines, yet to be insulated, conventional canvas covering and painting may be eliminated. On existing lines, jacketing can be applied directly over present canvas covering. Should piping later be relocated, aluminum covering can be removed and re-used.

Jacketing is available in two forms: with vapor barrier and without. Former comes in rolls 100' long, 48" wide (400 sq ft). Roll weight is approximately 40 lb. Jacketing without vapor barrier is in rolls 200' long, 48" wide (800 sq ft).

(Sheet aluminum jacketing, called Al-Cor-Jac, is a product of Aljon Manufacturing Co., Inc., Dept. CP, Chestnut Street and Highland Parkway, Roselle, N.J. . . . or check CP 1895, pages 2 and 3.)

Need to know specific gravity and boiling point of benzene-toluene-xylene mixtures? For quick answers use handy nomograph on page 186.

Material: Activator solution—water with 5% ferro-sulphate.

Problem: Short service life of turbine pumps; sometimes only two weeks.

Solution: First Moyno ran 6 months without a breakdown. Using relief valves, pressure is kept at constant 120 p.s.i. Now using 7 Moynos because of this exceptional service.

Material: 40° copperas crystals in 20% sulphuric acid.

Problem: Low production of diaphragm pump.

Solution: Moyno pump handles an increased percentage of solids, which in turn increases production.

Material: Anti-scale boiler treatment. (Alcohols, oils, anti-foam agents, sludge conditioners.)

Problem: Frequent pump breakdowns caused by back pressure of spray nozzles; and abrasion.

Solution: Moyno pumps cut pumping time from 20 minutes to 3, reduced down-time, increased production 200%!

Material: Calcium carbonate slurry.

Problem: Continuous failures of centrifugal pumps.

Solution: Moyno pump still giving perfect service after 1½ years. Service is practically continuous—with pump in operation 24 hours per day.

Material: Caustic solution—for use in mercerizing machines.

Problem: Rotary pumps wore quickly; lost capacity, and did not have enough suction.

Solution: Moyno pumps cut maintenance and repairs to minimum—had ample suction for drawing caustic through the cloth.

Material: Size—containing china clay and latex.

Problem: Centrifugals unable to handle viscosity—causing frequent trouble.

Solution: Moyno pump has been on duty for a year. Pump trouble completely eliminated; no repairs required.

Six Chemicals-Handling Problems... Solved by the MOYNO® PUMP!

Features of the MOYNO that may solve YOUR pumping problem

Positive Displacement—Moynos are available to pull up to 29" vacuum while discharging under pressure. Big Moynos deliver up to 250 g.p.m. at pressures to 600 p.s.i.

Gentle—No churning; won't break up semi-solids; won't aerate liquids.

Reversible—The Moyno pumps with equal efficiency in either direction.

Versatile—handles liquids, abrasive slurries, pastes—even potato salad! Rotor and stator are available in stainless steel, other alloys or plastics to meet a wide variety of applications.



Trouble-Free—self priming; won't cavitate or vapor-lock. Just one moving part—no valves to stick, no pistons to gum up. Built for tough service. Easy to maintain.

Looking for a pump with a fast-growing reputation for solving tough pumping problems? Then take a look at the simple, versatile Moyno!

Briefly described above are a few of the many successful case histories proving how Moynos handle jobs where other pumps fail. Why is the Moyno a "problem-solving" pump? For one thing, because it differs completely from conventional pumps . . . rotary, centrifugal or piston. Just one rugged moving part—a rotor turning within a stator—does the job.

The list of chemicals handled by Moynos gets longer every day. If you have a pumping problem, such as handling abrasive slurries, mild acids, caustics—watery, viscous or even semi-solid—find out if the Moyno can help you! Use the coupon below for prompt, complete information.

Robbins & Myers, Inc.
Pump Division, Springfield 99, Ohio

CP

Gentlemen: Please mail free copy of Bulletin 30-B containing details on construction and operation of Moyno Pumps:

Name _____ Title _____

Company _____

Address _____

City _____ State _____

ROBBINS & MYERS • INC.

SPRINGFIELD 99, OHIO • BRANTFORD, ONTARIO



Fractional & Integral h.p. Motors & Generators Electric Fans Electric & Hand Hoists & Cranes Moyno Pumps Propellair Industrial Ventilating Equipment

When inquiring check CP 1896 on handy form, pgs. 2-3



Safely Ventilate

Moisture and Fumes

Gallaher Air-Vans® have motor out of air stream and patented scroll design

Motor out of airstream in only part of this protection. Fresh clean air is constantly drawn through the motor hood creating an air curtain around the motor shaft which absolutely prevents fumes from entering the housing while the unit is in operation.* This eliminates most special winding motors.

Where high slot speeds must be maintained Gallaher Air-Vans with patented scroll effect design are generally the answer. Design research has shown that without this feature efficiency against even 1/4" S. P. is impossible. Gallaher units develop up to 4" static pressure and 65,000 CFM. Ratings have been certified in an independent laboratory under the direction of a nationally recognized authority.

Other features include low silhouette, weatherproof design, low noise levels, and availability in special metal and finishes, shipped as a complete package ready for installation.

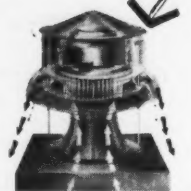
* Patented exclusive features

The GALLAHER Company

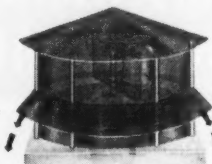
4108 Dodge Street

Omaha 3, Nebraska

When inquiring check CP 1897 on handy form, pgs. 2-3



Gallaher Air-Van Direct Drive
150-11,000 CFM S. P. to 4.2"



Gallaher Belt Drive 5,000-
65,000 CFM S. P. to 4"

MAINTENANCE

Selenium rectifiers assure long life for drive . . .

adjustable speed unit offered in nine sizes

Uses: Rectifying power supplied to a DC motor.

Features: Selenium rectifiers and magnetic amplifiers used in drive will not burn or wear out in ten years of normal service, according to manufacturer. There is no need to stock replacement parts. Production need not be interrupted for servicing.

Description: Adjustable-speed drive is offered in nine sizes from 1/4 through 5 hp. Rectification is controlled by magnetic amplifiers to give a drive which has a 100 to 1 speed range with flat speed regulation out to full load at lowest speed. Unit has a compact panel layout, industrial control panel wiring, and an easily installed cabinet.

(Adjustable-speed drive is a product of Franklin Control Corporation, Dept. CP, 1975 S. Allis St., Milwaukee 7, Wis. . . or check CP 1899, pages 2 and 3.)



CRESCENT Polyethylene MULTITUBE

Crescent Polyethylene Multitube is your answer for economy with lasting dependability in your instrument tubing problems.

Crescent Polyethylene Multitube is composed of 2 to 19, 3/4" O.D. Polyethylene tubes up to 1000 feet in length, spirally cabled together to allow bending with a short radius without distortion of the tubes. The tubing assemblies are protected by a flexible interlocking galvanized steel armor (Type PA), or by a tough corrosion-resistant thermoplastic sheath (Type PT). One bright blue tube in each layer permits a ready identification of each tube at both ends for ease of connection.

Type PA— The galvanized steel armor provides complete protection from injury during and after installation. In the event of fire, the molten Polyethylene is retained within the armor.

Type PT— The polyvinyl chloride thermoplastic sheath provides good mechanical resistance, with complete corrosion resistance, and it is flame retarding.

Economy is achieved in the initial cost of CRESCENT POLYETHYLENE MULTITUBE and its accessories, as well as in substantial savings in labor costs of installation. Moderate to long length runs of light weight and compact MULTITUBE assemblies result in fewer connections and fittings, lower cost for supports or racks, ease of mounting, with less space being used.

Crescent Polyethylene Multitube can be pulled through conduit or raceways.

SEND FOR BULLETIN

CRESCENT

INSULATED WIRE & CABLE CO.

TRENTON 5, N. J.

When inquiring check CP 1901 on handy form, pgs. 2-3

HIGHEST QUALITY SUPERIOR CRAFTSMANSHIP

A.S.M.E. CODE

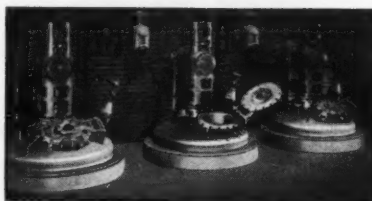
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A.S.M.E. CODE CHEMICAL PROCESSING EQUIPMENT FOR PILOT PLANT OR PRODUCTION

For over half a century Cream City Boiler Company has been a recognized leader in the fabricating field. Today our experienced craftsmen and versatile methods give you more dependable, economical, high quality equipment — as you want it — when you want it.



Our engineers will assist you in the selection of the most economical design for your requirements.

WRITE OR WIRE FOR NAME AND ADDRESS OF NEAREST REPRESENTATIVE.

CREAM CITY BOILER CO.

1605 SOUTH 43rd STREET

MILWAUKEE 46, WISCONSIN

When inquiring check CP 1898 on handy form, pgs. 2-3

Stamina of relief valve shown by 6902 cycles with no variations

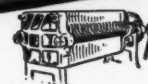
Uses: Agricultural and industrial chemical applications.

Features: By actual count, ammonia relief valve cycled a total of 6902 times, showing no variations in predetermined pressures at which valve opened and closed. Results are said to stem from controlled cushioned seat disc incorporated in valve.

Description: Cup seat design provides consistent opening of valve at marked set pressure. Seal is made by lip of cup against metal-to-metal stop of valve seat and OD of piston. In this way, pressure in tank aids sealing action of cup lip until set pressure is reached and piston lifts. Excessive deformation of sealing ring is prevented. Cup seat disc is replaceable.

(Ammonia relief valve is a product of Henry Valve Co., Dept. CP, 3215 North Ave., Melrose Park, Ill. . . or for more information check CP 1900 on handy form, pages 2 and 3.)

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EXPERIENCE
FOR YOUR
FILTRATION PROBLEM

Now is a relative word. A seemingly new filtration problem may well be "old hat" to Sperry, whose unparalleled record in servicing the needs of industry for over 60 years provides the answer to Superior Filtration — at lower cost!

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When inquiring check CP 1902 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Same and dissimilar materials bonded by adhesive . . .

various nylon adhesions are of particular interest

Uses: For bonding both similar and dissimilar materials.

Features: Thermosetting industrial adhesive has been found to have excellent bonding ability for metal-to-metal, and metal-to-nylon, as well as for aluminum, steel, brass, copper, glass and nylon adhesions. Of particular interest is its ability to bond nylon to a variety of materials.

Description: Consisting of highly adhesive reactive resins in a solvent system, Phenoweld is easy to use, requiring no primer. For general applications, it is simply applied in solvent solution by brush, spray, or dip to both parts. When all of solvent is evaporated, adhesive is tack free, and remains so. Parts to be assembled are then held together under gentle pressure. This produces an effective bond and is especially important in products such as wood and thermoplastics where time and temperature bonding cannot be tolerated.

For maximum physical adhesive bond and maximum chemical and solvent resistance, application of heat while the parts to be bonded are held together is recommended. This heat fuses films of adhesive and bonds them together through the thermochemical reaction. It is to be emphasized that this heat application is necessary only where a high degree of chemical and solvent resistance is required.

Material is said to have excellent electrical properties making it valuable in the electronics industry. It is non-tarnishing and finds wide usage in the production of loud speakers, electronic coils, and wiring equipment where protection from the elements as well as adhesive ability is desired.

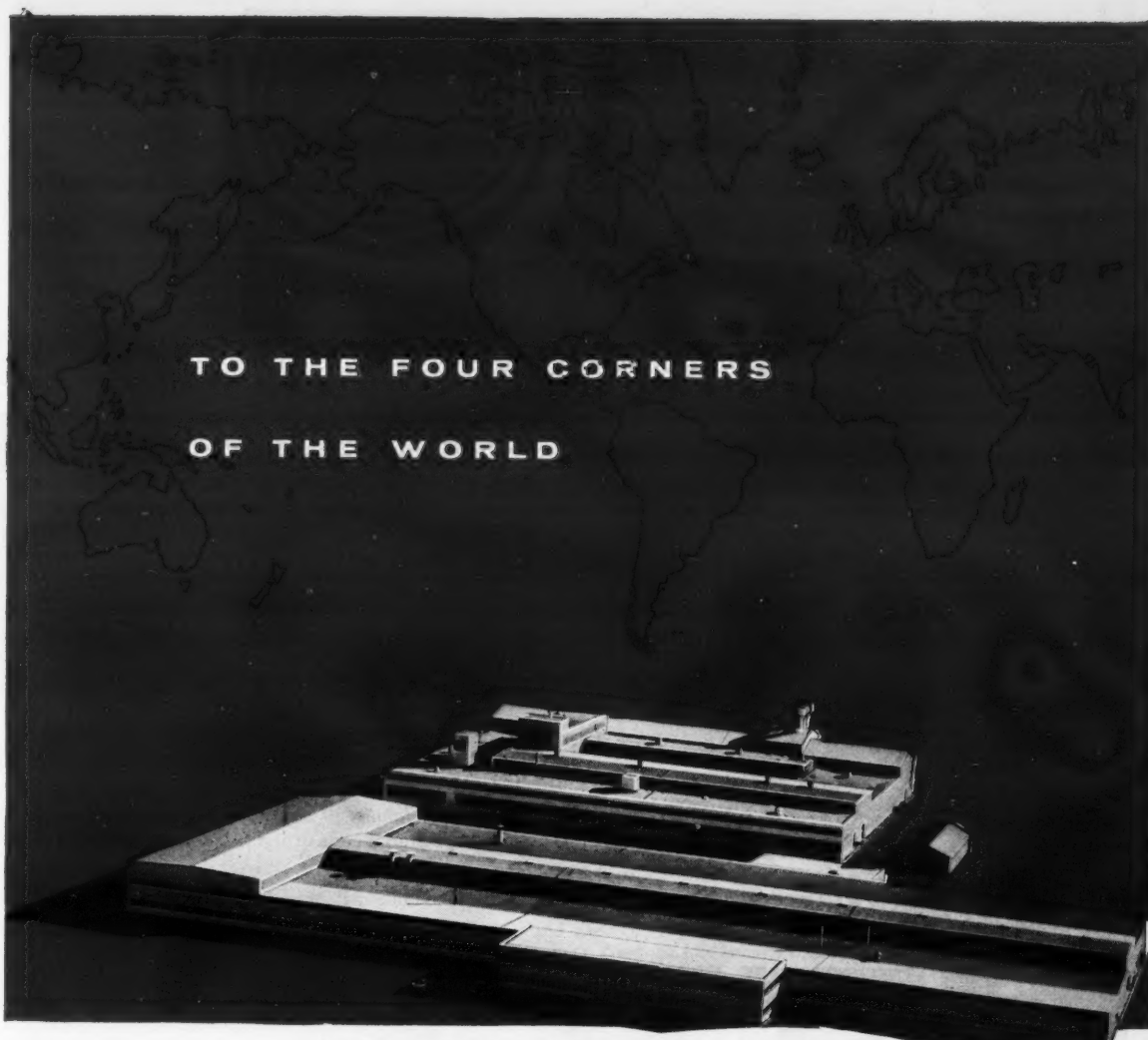
(Adhesive is a product of H. V. Hardman Co. Inc., Dept. CP, 571 Cortlandt St., Belleville, N. J. . . . or for more information reader may simply check CP 1903 on the convenient Reader Service slip located between pages 2 and 3.)

Gives data on beryllium copper tubing

Properties, applications, and advantages of seamless and Weldrawn beryllium copper tubing are presented in nine data sheets. Alloy described can be formed cold in soft annealed or slightly work-hardened condition. After heat treatment it shows high strength and hardness, wear resistance, and electrical conductivity.

Mechanical and physical properties, heat treating procedures, welding and brazing methods, pickling solutions, corrosion resistance tables, standard production limit tables, and tubing tolerances are listed.

Data Memorandum 7-2 is available from Superior Tube Company, Dept. CP, 1512 Germantown Ave., Norristown, Pa. When inquiring reader may simply specify CP 1904 on handy form, pages 2 and 3.



Aerial view of the Kansas City, Kansas, Works, Fairbanks, Morse & Co., 3601 Kansas Avenue.

...from Kansas City

Yes, from our new, modern-as-tomorrow works at Kansas City, we serve the world's needs for pumps.

As a major supplier of quality pumping equipment, it is particularly suitable that this new Fairbanks-Morse plant be located at an important crossroads of the world . . . Kansas City. In this new plant 190,000 square feet of manufacturing space and a complete foundry occupy-

ing 150,000 square feet are devoted to bringing better service to our customers all over the world.

Modern manufacturing, development and testing equipment backed by engineering and production skills of highly trained personnel combine to produce products of unmatched quality . . . in performance, durability, economy. Fairbanks, Morse & Co., Chicago 5, Illinois.



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When inquiring check CP 1905 on handy form, pgs. 2-3



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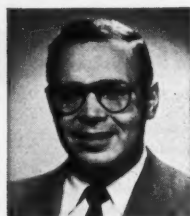
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ENGINEERING & MAINTENANCE

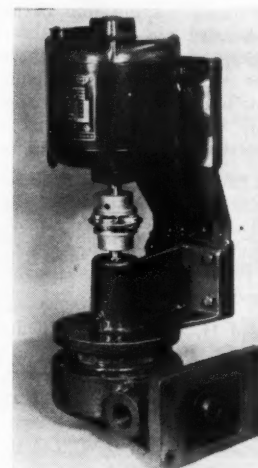
External piping eliminated by optional third outlet on centrifugal pumps...

units handle practically all liquids not too viscous or corrosive for modern alloys

Uses: Adaptable to both continuous and intermittent pumping operations in numerous industries. Pumps will handle practically all liquids not too viscous or corrosive for the standard corrosion-resistant alloys.

Features: Improved design of two basic models of centrifugal pumps feature an optional third outlet back through intake port, which eliminates external piping.

Description: Both improved models (FB-VBA and F-VBA) are designed for flange mounting on outer surface of a tank or reservoir, eliminating auxiliary inlet piping. Positive prime is assured even with reduced height of liquid in supply tank, insuring efficient operation with low liquid level. Conventional right or left discharge outlets are available, in addition to third outlet.



Designed for flange mounting on
outer surface of tank or reservoir

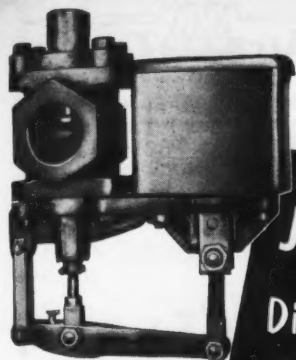
Model FB-VBA pumps are supplied with a motor base bracket which is attached to pump to facilitate mounting of any standard motor. Motor base may also be assembled 90° or 180° counter-clockwise from position shown, providing maximum versatility of installation. Pump and motor are connected by a flexible coupling.

Model F-VBA pumps are similar to FB-VBA series, with exception of motor base bracket.

A belt, chain, or gear drive may be used, or pump and motor may be individually mounted on outer surface of tank or reservoir, connected by a flexible coupling.

Pumps are furnished with several different outlet port positions. Sizes range from 1/20 to 5 hp. Larger sizes are rated up to 174 gpm at free flow and 36 gpm at 115 ft of head (50 psi) based on water at 60°F. Pumps are factory-tested within 5% of rating before shipment, and are available less motor, flexible coupling, and motor base (when applicable).

(Centrifugal pumps are a product of Pioneer Pump Division, Detroit Harvester Company, Department CP, 14300 Tireman Avenue, Detroit 28, Michigan... or for more information concerning manufacturer's product, reader may simply check CP 1906 on the convenient Reader Service slip which is located between pages two and three.)



OUTSTANDING FOR STEAM SERVICE

JOHNSON
Direct Operated
**SOLENOID
VALVES**

Stainless steel
valve and seat.
Sizes: 1/2" to 3".
Write for facts.

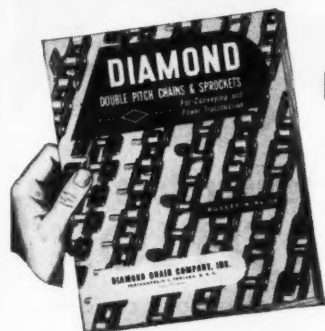
Job after job, these Johnson Direct Acting Solenoid Valves are proving an ideal answer for service on steam lines. Their design removes the solenoid proper from the heat of the line, permits a leverage system with ample power to open against differential pressures up to 150 lbs. There are no pilot valves or auxiliary pistons, and construction is really heavy duty throughout. You will find their inherent simplicity and instant response will solve a lot of operating problems like no other valve can.



826 Wood St., Three Rivers, Mich.

When inquiring check CP 1907 on handy form, pgs. 2-3

NEW BULLETIN 34



**DIAMOND
DOUBLE PITCH
CHAINS AND
SPROCKETS**

Copy mailed
on request

This new Bulletin 34 contains complete usable data on the great variety of Double Pitch Conveyor Chains, Sprockets and Attachments. Included also is the information on Diamond Double Pitch Transmission Chains that combine light weight with long-life dependability for moderate speed power drive applications. Just off the press—a copy is offered by the manufacturer—

DIAMOND CHAIN COMPANY, Inc.
Dept. 411, 402 Kentucky Ave., Indianapolis 7, Ind.

When inquiring check CP 1908 on handy form, pgs. 2-3

AUGUST, 1954

MAINTENANCE

**Four-in-one unit etches,
demagnetizes, solders,
and magnetizes . . .**

no experience is necessary to
operate

Uses: For use in tool rooms,
job shops, production departments.

Features: This four-in-one electric unit hand-etches tools, dies, and production parts of any metal, and demagnetizes tools, die, fixture parts, and production items of similar size.

Description: Etcher and demagnetizer is portable, ruggedly built, and simple to operate (no experience required). It has no moving parts, and nothing to wear out except etching and soldering tips, which are quickly replaced. Unit can be used wherever desired. It plugs into any 115v 50/60c outlet.



Etcher and demagnetizer may be
used wherever desired

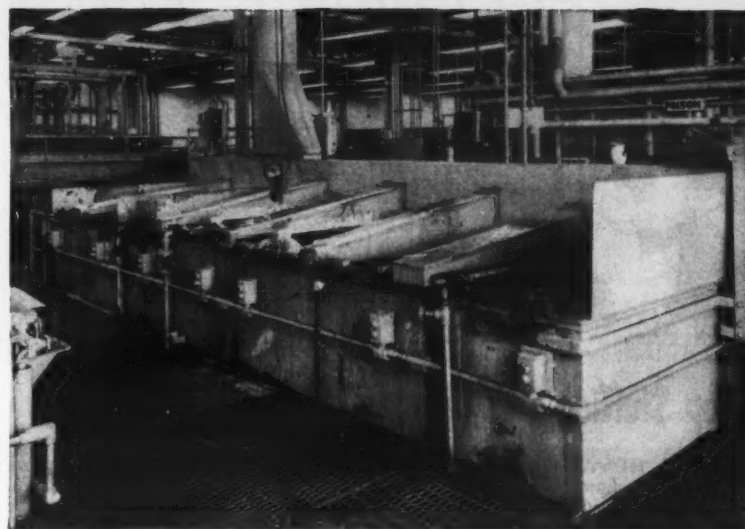
Power unit is 10" wide, 8" high, and 8" deep. Net weight is approximately 5 lb.

(Etcher and demagnetizer is a product of Electro Arc Sales Company, Dept. CP, 5270 Geddes Road, Ann Arbor, Mich. . . . or check CP 1909, pages 2 and 3.)

Details water treatment for cooling towers

Informational bulletin discusses water treatment for cooling towers. Kinds of cooling systems are covered.

Bul 28X7501A is available from Allis-Chalmers Mfg. Co., Dept. CP, 1151 S. 70th St., Milwaukee 1, Wis. When inquiring specify CP 1910, pages 2 and 3.)



This electrical raceway passes the acid test



It's Republic Dekoron-Coated Electrical Metallic Tubing. And it's used in Western Electric Company's Indianapolis plant along the sides of hydrochloric dip tanks. (Dekoron-Coated E.M.T. comes in black. Western Electric painted it gray to conform with the tanks.)

Until recently, the company used ordinary standard conduit and fittings. The acid atmosphere chewed them up so fast that every four to six months they had to be replaced.

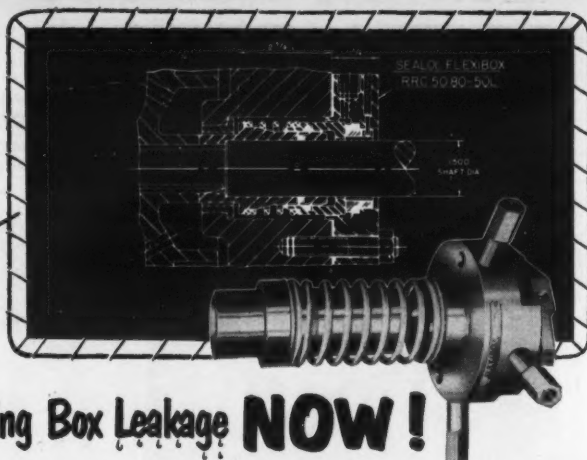
Dekoron-Coated E.M.T. has been on the job 9 months now and shows no sign whatsoever of corrosion. Its coating of polyethylene over the galvanized finish of Republic E.M.T. gives double protection against corrosion. Properly installed, it gives continuous corrosion-free protection from outlet to outlet.

With Republic Dekoron-Coated E.M.T. you get a maintenance-free wiring system that lasts longer, costs less. Get all the facts about this economical electrical raceway with the unusual resistance to corrosion. Write for DEK-1.

REPUBLIC STEEL CORPORATION
Steel and Tubes Division
205 E. 131st Street, Cleveland 8, Ohio
GENERAL OFFICES • CLEVELAND 1, OHIO
Export Department: Chrysler Building, New York 17, N.Y.



When inquiring check CP 1911 on handy form, pgs. 2-3



Stop Stuffing Box Leakage NOW!

HERE'S HOW. Bolt in a Sealol-Flexibox mechanical shaft seal in place of your conventional pump packing. Then watch this seal get rid of your pump maintenance problems. See how it eliminates gland leakage and shaft scoring . . . how it stops dangerous, wasteful loss of valuable product.

Write us about your shaft sealing problems. We'll be glad to send you details on Sealol-Flexibox designs for stuffing box replacement, for designed-in pump installations, or for special applications. Send for Bulletin 9 and complete details. Sealol Corporation, 21 Willard Ave., Providence 5, R. I.

SEALOL

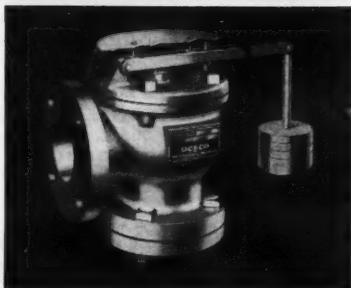
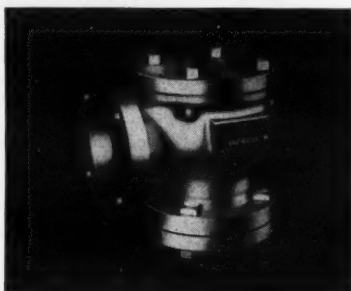
THE BALANCED PRESSURE SEAL

When inquiring check CP 1912 on handy form, pgs. 2-3

NEW YORK CITY • PHILADELPHIA
CHICAGO • CLEVELAND
HOUSTON • SAN FRANCISCO
LOS ANGELES • KANSAS CITY (MO.)
CHARLESTON (W. VA.) • ST. LOUIS
TULSA • EDMONTON — TORONTO, CAN.

OCECO vacuum and pressure RELIEF VENTS

• Ideally suited for a wide variety of vacuum and pressure relief requirements. Cast steel housings. Bronze or stainless steel trim. 3" x 3"; 4" x 4"; and 6" x 6" sizes. Standard A.S.A. flanges. Vacuum setting, 1½ oz. to 1 lbs. per square inch. Pressure relief valves provided with a lever and weight for settings from 2 lbs. to 30 lbs. per square inch as desired. Write for fully descriptive data sheet.



OCECO TANK FITTINGS

THE JOHNSTON & JENNINGS CO.

division of PETTIBONE MULLIKEN CORP.

4751 West Division St.

Chicago 51, Illinois

When inquiring check CP 1913 on handy form, pgs. 2-3

MAINTENANCE

Turbulence, pressure drop decreased in jacketed relief valve . . .

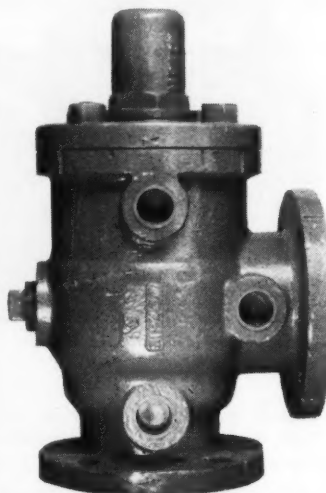
valve disc has been changed to top-guided

Uses: For relief valve applications where heated jacket is needed due to viscosity of materials.

Features: Design of valves has been improved in that old bottom-guided valve disc has been changed to top-guided to decrease turbulence and pressure drop.

Description: This totally-enclosed, fully-jacketed, leak-proof relief valve is cast in one piece — body, flanges, and jacket. It is available in semi-steel, ductile iron, and Ni-resist with cast iron, bronze or stainless steel trim.

Valve is made in 2 and 3" sizes only. Set pressures can range from 10 to 125 psi.

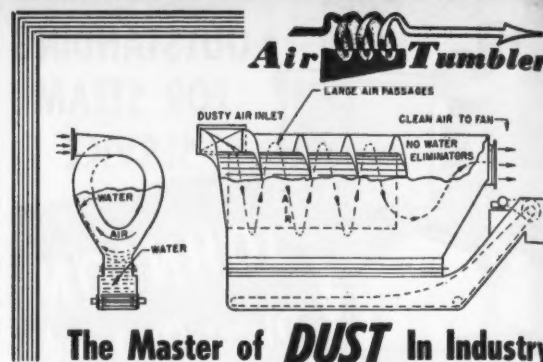


Valve is cast in one piece

Flange drilling and facing are to ASA B16 standards for 125-lb cast iron fittings. Wall thickness equals or exceeds ASA minimum specifications. Material specifications exceed ASTM 126 Class B; minimum tensile strength is 35,000 pounds per sq in.

Semi-steel and Ni-resist valve is suitable for 150 psi jacket pressure; ductile iron is suitable for 300 psi jacket pressure.

(Jacketed relief valve is a product of Parks-Cramer Company, Dept. CP, 444 Rose St., Fitchburg, Mass. . . . or for more information check CP 1914 on handy form, pgs. 2-3.)



The Master of DUST In Industry

The soundness and simplicity of design, which so unmistakably distinguish the AIR TUMBLER from all other wet type dust collectors, assure not only very high efficiency of collection, but also dependable performance with a minimum of maintenance. Recirculation of the air is accomplished without causing condensation, because of the extremely low humidification of the air by the AIR TUMBLER.

Other advantages are: no fire hazard, low water consumption, low pressure drop, and low cost.

These advantages are recognized by the users, whose re-orders contributed over 80% to our 1953 sales.

Write for Bulletin No. 531 to:

Dust Suppression and Engineering Co.

P. O. Box 67, Lake Orion, Michigan

Agents in the principal cities. Licensees in many foreign countries.

When inquiring check CP 1915 on handy form, pgs. 2-3



FIRST high temperature hose assembly using TEFLON*

. . . handles even the most corrosive fluids to +450° F!

Fluoroflex-T hose assemblies mark a tremendous advance in flexible line serviceability. Look at these features:

- Fluoroflex-T (Teflon compound) tube . . . chemical-proof, non-swelling . . . absorbs vibration
- Flexibility that doesn't change from -100° to +450°
- Stainless steel braid—for 1000 psi working pressures and for high external corrosion resistance
- Compact fittings swaged to armor and tube—won't blow off
- Light weight! Space saving! Non aging!

Write for Bulletin FH-1.

*DuPont trademark for its tetrafluoroethylene resin. †Resistoflex trademark for products from fluorocarbon resins.

RESISTOFLEX corporation

Belleville 9, New Jersey

When inquiring check CP 1916 on handy form, pgs. 2-3

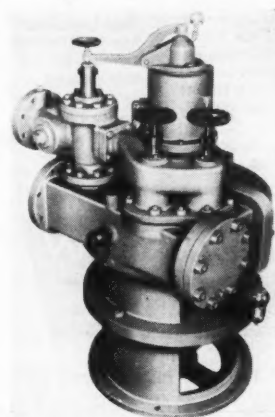
CHEMICAL PROCESSING

Addition of another steam nozzle increases turbine power 100% over previous models . . .

for longer service, units have a double-row ball bearing with greater thrust capacity

Uses: In those industries requiring vertical steam turbine service.

Features: Major change in turbine line is addition of another steam nozzle to all models. As a result, Models DH-10V and DH-20V have 100% more power than former one-nozzle counterparts. Model DH-30V now has three steam nozzles — and 50% more power.



Maintenance of turbine is easy even for the unskilled

Description: For longer service, steam turbines have a double-row ball bearing with greater thrust capacity. Overlapping labyrinth slinger on lower bearing prevents moisture seepage.

Two hand valves improve regulation of water rate at reduced loads. Improved packing boxes check steam pressure leakage and permit a higher working exhaust steam pressure.

In turbine design, high pressure steam does not come in contact with casing. All high pressure parts and joints are outside and visible to operator. Maintenance is easy, even for unskilled employees.

(Steam turbines are a product of Dean Hill Pump Co., Dept. CP, 4000 E. 16th St., Indianapolis, Ind. . . . or for more information check CP 1917 on the convenient Reader Service slip which is located between pages 2 and 3.)

Quick comparison of old and new NEMA AC motor frames aided

To dispel any confusion over old and new mounting dimensions, one-page chart aids in quick comparison of old and new NEMA AC frame assignment standards. Chart shows, at a glance, comparative dimensions of open and fan-cooled polyphase induction motors. There are sub-charts for comparing frame sizes according to hp and speed. For quick reference, two simplified motor outlines give essential dimensions key to letters.

"Compar-A-Frame" chart is available from Reliance Electric & Engineering Co., Dept. CP, 1088 Ivanhoe Rd., Cleveland 10, Ohio. When inquiring reader may simply specify CP 1918 on the convenient Reader Service slip which is located between pages 2 and 3.

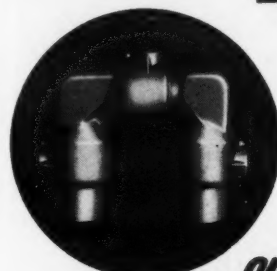


The CHIKSAN Ball Bearing Swivel Joint illustrated above is an unretouched photograph of a veteran of 20 years service on an oil well cementing hose.

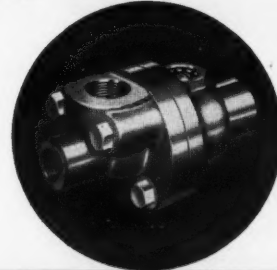
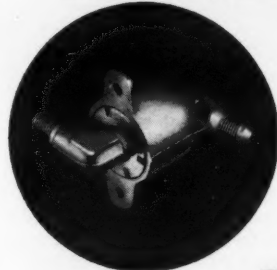
Above unretouched photograph shows the "guts" of the original 2" style 50 single ball race CHIKSAN Swivel Joint after 20 years of rigorous service in the California oil fields. Note the good condition of the wearing surfaces. This joint has been improved through the years to the present modern double ball race joint.

CHIKSAN

IS NO "JOHNNY COME LATELY" TO INDUSTRY...



Modern types of CHIKSAN swivel joints.



- Over a quarter of a century of "know-how" in design, manufacture, and successful application of swivel joints.
- Originator and largest exclusive manufacturer of ball-bearing swivel joints.
- The widest range of styles, sizes and pressures available for every major industry.
- Packing designs available for each specific service, assure constant torque at any given pressure.
- World-wide recognition for highest quality and lowest maintenance costs.
- Complete nation-wide coverage by qualified field service engineers.
- If you require unlimited flexibility with unlimited life—be sure you specify and buy CHIKSAN Ball Bearing Swivel Joints.



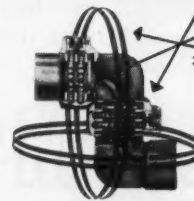
Supply and Service of CHIKSAN Ball Bearing Swivel Joints is always as near as your telephone. Write CHIKSAN for Specific Catalog Information. Dept. 8-CP

The Flow of Enterprise Relies on

CHIKSAN

Ball-Bearing Swivel Joints

THE NEW TOOL OF MODERN INDUSTRY

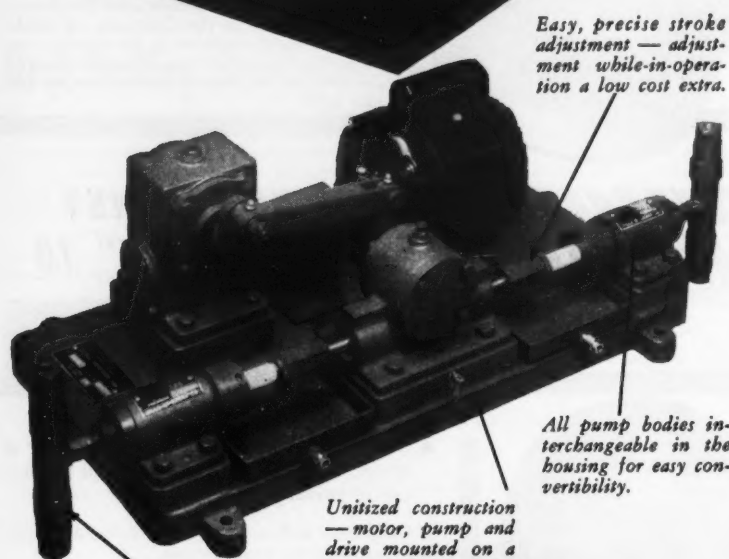


CHIKSAN Ball Bearing Swivel Joints are THE NEW TOOL of Modern Industry with full 360° rotation in 1, 2, and 3 planes. Over 1,000 different types, styles, and sizes have been developed for pressures and services from 28" vacuum to 15,000 psi and for temperature ranges from minus 70° to a plus 500° F. with packing materials for each specific service.

CHIKSAN COMPANY • BREA, CALIFORNIA • Chicago 3, Illinois • Newark 2, New Jersey
Well Equipment Mfg. Corp. (Division), Houston 1, Texas • Subsidiaries: Chiksan Export Co., Brea, Calif., Newark 2, N.J. • Chiksan of Canada Ltd., Edmonton, Alta.

When inquiring check CP 1919 on handy form, pgs. 2-3

Can your proportioning pumps match this for convenience and versatility?



Easy, precise stroke adjustment — adjustment while-in-operation a low cost extra.

All pump bodies interchangeable in the housing for easy convertibility.

Unitized construction — motor, pump and drive mounted on a common base.

Separate, interchangeable external check valves for easy dismantling or replacement.

**HILLS-McCANNNA
"U" TYPE
PROPORTIONING PUMPS**

Hills-McCanna "U" Type Proportioning pumps combine precision operation with high standards of convenience and versatility not ordinarily associated with pumps of this type. The "U" pump is easy to install and can be converted quickly and economically for changing service requirements.

If you must continuously meter or proportion small volume flows with great accuracy, it will pay you to consider a Hills-McCanna "U" Type Pump. Capacities range from 0.10 to 24 gph per feed, 1, 2, 3 and 4 feed units are available.

Write for Catalog UP-54. HILLS-McCANNNA CO., 2370 W. Nelson St., Chicago 18, Ill.

HILLS-McCANNNA

metering and proportioning pumps

Also Manufacturers of:
SAUNDERS TYPE DIAPHRAGM VALVES
FORCE FEED LUBRICATORS • MAGNESIUM SAND ALLOY CASTINGS

When inquiring check CP 1920 on handy form, pgs. 2-3

MAINTENANCE

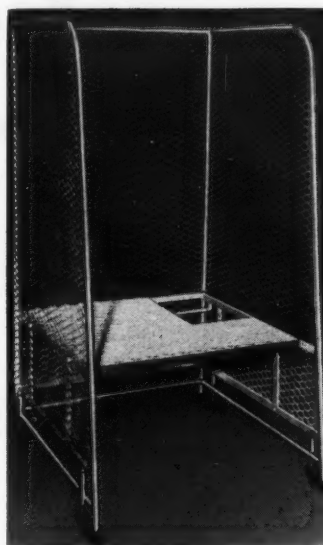
Safety of operation assured by special platform . . .

cage forces accident prevention

Uses: To protect fingers, arms and head of operator of paper-shearing machine.

Features: Platform-cage actually forces accident-prevention on worker.

Description: Foot pedal actuating shear comes through expanded steel lathe floor of cage, making it necessary for operator to step into safety cage to start machine. Carelessness is thus made impossible, and an inexperienced operator can work in safety.



Operator must be in cage to start shearing machine

(Custom-built work platform is a product of The Ballymore Co., Dept. CP, 139 Pennsylvania Ave., Wayne, Pa. . . . or check CP 1921, pages 2 and 3.)

Illustrates advantages of carbon steel tees

Dimensional and weight information on company's line of carbon steel welding tees is presented in two-page bulletin.

Form STF-2 is issued by Northern Indiana Brass Co., Dept. CP, Elkhart, Ind. When inquiring specify CP 1922, pages 2 and 3.

New Infinitely Adjustable



MARMAN
Stainless Steel T-bolt Band Clamp

The new Marman-designed, "Infinitely Adjustable," stainless steel band clamp is far stronger than any hose clamp. Tough . . . vibration and corrosion proof . . . it can be applied or removed in seconds. Use it over and over again at varying diameters. The wide band prevents cold flow, a frequent cause of leakage. Marman T-bolt fastener provides fast, easy assembly . . . cannot slip or vibrate loose.

. . . For chemical, marine, automotive and a host of other applications.

Place T-bolt through hole nearest required diameter — then fold strap under and tighten with wing nut.

TO ORDER — SPECIFY "SERIES 859" CLAMP
Dia. 1¼" to 2¾"
Dia. 2½" to 4½"
Dia. 4¾" to 6"

Write, wire or phone Dept. CP-854

THERE IS A MARMAN
CLAMP OR COUPLING
AT EVERY
GOOD JOINT

MARMAN
PRODUCTS CO., Inc.
11214 EXPOSITION BLVD.
LOS ANGELES 64, CALIF.

When inquiring check CP 1923 on handy form, pgs. 2-3

MASTERPLATE "Iron-Clad" Safety Flooring



Section of Masterplate Floor.
Note Thickness of Armored Surface

THREE FORMULATIONS OF MASTERPLATE* TO MEET YOUR SPECIFIC NEEDS

Standard Masterplate, or Ready-4-Use Masterplate produces these floor features:

- Non-Slip Surface
- Non-Dusting
- Wear-Resistant
- Corrosion-Resistant
- Easy-To-Clean
- Color

DPS Masterplate produces these floor features:

- Static-Disseminating
- Non-Combustible
- Spark-Resistant
- Heavy-Duty

(plus above features except non-slip surface)

WRITE FOR 24-PAGE ILLUSTRATED BOOKLET

*Applied as a dust-coat to fresh concrete. For new floors and resurfacing old concrete floors.

the MASTER BUILDERS
CLEVELAND 1, OHIO A Division of American Mastic Company TORONTO, ONTARIO

When inquiring check CP 1924 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Bonding strength of 41.7 psi characterizes moldable insulating cement . . .

material is furnished as dry mix and is prepared on the job by adding water

Uses: As insulation on fittings, tanks, and other equipment — as a void filler where insulation is permanent. Material may be molded to form removable covers on tanks, or may be cast to shape.

Features: Insulating cement has a gripping power of 41.7 psi and will adhere to any clean, dry surface — steel, glass, concrete, tile, wood, or plaster board. No surface reinforcing attachments are necessary to assist adhesion. Material withstands vibration and hard usage. It is resilient and jointless, incombustible and non-shrinking.

Description: Atoz insulating cement is furnished as a dry mix. It is prepared for application on the job by adding water and mixing. It is composed of a cellular filler with an inorganic binder. When mixed with water a chemical action takes place which forms thousands of small air cells separating each particle of filler.

There are two kinds of this insulation available: Type B is made to withstand temperatures up to 600°F; Type C withstands temperatures from 0 to 212°F. The latter is cork-filled and is recommended for anti-sweat applications within its temperature range.

(Insulating cement is a product of Kragor Corp., Dept. CP, 884 N. Graham St., Allentown, Pa. . . or for more information check CP 1924A on handy form, pages 2 and 3.)

Only solvent activation required to give adhesive-coated dryback wet-cement bond . . .

material shows no tendency to block or lose bond at elevated temperatures

Uses: On sponge rubber, rubber, and weather-stripping, for application to metal, glass, wood, and many other surfaces.

Features: Adhesives requires only solvent activation. Adhesive-coated dryback gives bond strength of wet cements, yet shows no tendency to block at elevated temperatures.

Description: Dri-Bak adhesive is the toluene solvent type, with synthetic rubber base. When applied like paint, in liquid form to strips or sheets, it is fast drying. When dry, pieces can be packed and shipped without danger of blocking. User activates adhesive film by wiping with solvent prior to use. Fast grab and rapid, full strength adhesion are assured. High bond strength is retained even at elevated temperatures.

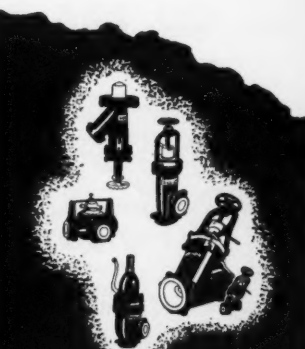
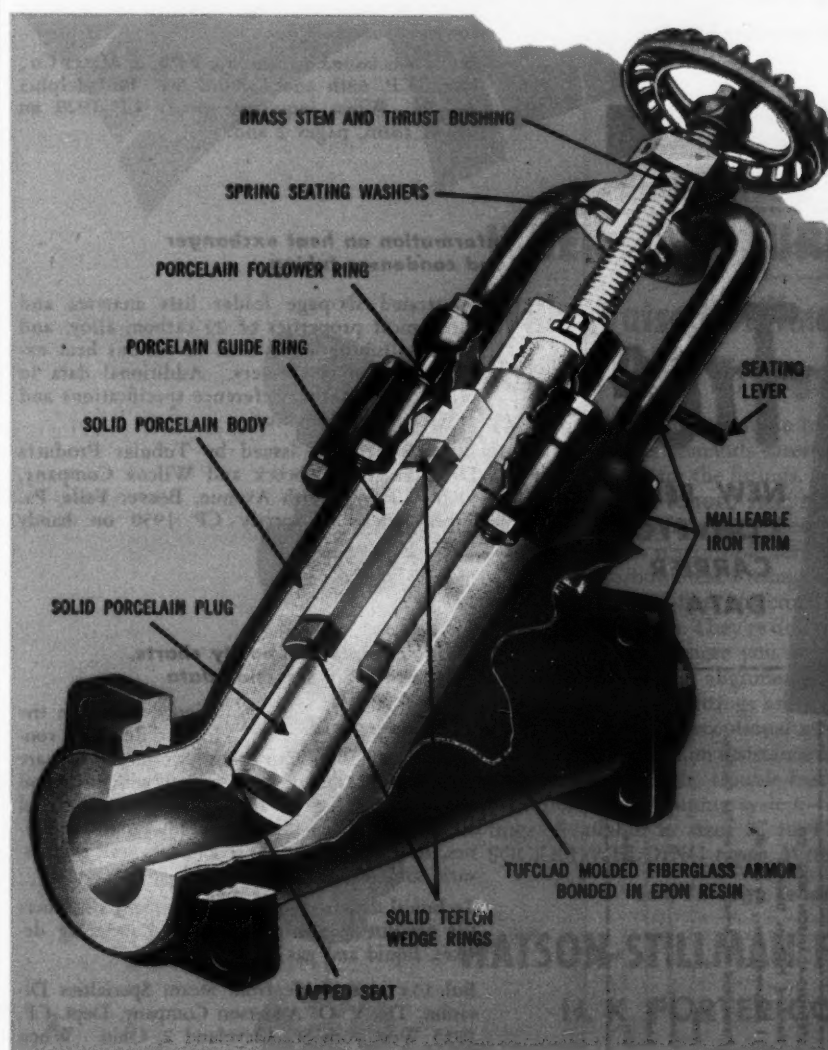
(Adhesive is a product of Dacar Chemical Products Company, Dept. CP, McCartney at Wabash St., Pittsburgh 20, Pa. . . or for more information check CP 1925 on handy form, pages 2 and 3.)

Precision Grinding of Solid Porcelain in the Lapp Valve



The high firing temperature, which assures complete vitrification and zero porosity of Lapp Porcelain, also makes impossible the maintaining of close dimensional tolerances. Necessary tolerances are achieved, however—in regular production $\pm .001$ "—by machine grinding with silicon carbide wheels. In the Lapp Valve, the entire stuffing box chamber, seating area, plug, guide and follower rings are finish ground, for precision assembly and complete interchangeability of parts. In addition, each porcelain plug is individually lapped and polished into its seat integral in the valve body. (No separable seating parts.) Each such valve seal is tested to 150 psi hydrostatic pressure before the valve is shipped.

Write for bulletin with complete description, characteristics, and specifications. Lapp Insulator Co., Inc., Process Equipment Division, 320 Wendell St., LeRoy, New York.



Y-valves, angle valves, flush valves, safety valves, and plug cocks of Lapp Porcelain have standard bolt-circle flanges for easy connection to all piping and equipment.

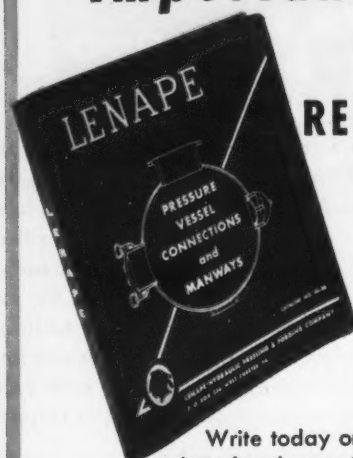
Lapp

**PROCESS
EQUIPMENT**

Chemical Porcelain Valves
Pipe • Raschig Rings • Pulsefeeder
Chemical Proportioning Pumps

When inquiring check CP 1926 on handy form, pgs. 2-3

Important



NEW REFERENCE DATA

on the complete
line of Lenape
pressure vessel
connections,
manways,
necks,
nozzles, etc.

Write today on your company
letterhead reserving your copy of
Lenape Catalog 1053.

84 pages of quick answers at your fingertips.



When inquiring check CP 1927 on handy form, pgs. 2-3



Free

NEW BELT CONVEYOR CARRIER DATA

Full information on new low-priced 745 series belt conveyor carriers now available for immediate delivery from stock. New carrier simplifies ordering and stocking for many applications. Bulletin No. 554 tells how to order and install—describes design features usually found only in higher priced carriers. Mail coupon for your copy today.

745 Carriers are available from stock for 18", 24", 30" and 36" conveyor belts.

STEPHENS-ADAMSON MFG. CO.

Standard Products Division
11 Ridgeway Ave., Aurora, Ill.

Please send me Bulletin 554 on 745 Carriers

Name.....
Company.....
Address.....
City.....
Zone.....
State.....

When inquiring check CP 1928 on handy form, pgs. 2-3

new literature

Illustrates and gives specifications on flowmeter and controllers

Illustrated 36-page catalog compiles manufacturer's line of flow meters, controllers, and recorders. Venturi tubes, controllers, filter gages, elevation gages, sand expansion gages, turbine taps, manometers, and valves are some of the items described and shown. Dimensional data are listed in easy-to-read chart form. Plant view and front elevation drawings are included for most units.

Bul 004 is issued by Simplex Valve & Meter Co., Dept. CP, 68th and Upland Sts., Philadelphia 42, Pa. When inquiring specify CP 1929 on handy form, pages 2 and 3.

Information on heat exchanger and condenser tubing

Illustrated six-page folder lists analyses and mechanical properties of 29 carbon, alloy, and stainless tubing steels used in various heat exchangers and condensers. Additional data in other tables include reference specifications and application information.

Bul TB 329A is issued by Tubular Products Division, The Babcock and Wilcox Company, Dept. CP, 4029 4th Avenue, Beaver Falls, Pa. When inquiring specify CP 1930 on handy form, pages 2 and 3.

Contains complete capacity charts, other steam trap selection data

Bulletin of four pages is designed to aid in the selection of steam traps. It first discusses construction of steam trap whose working parts are made of heat-treated stainless steel, with valve and seat fabricated from a hard, tough, chrome-nickel alloy. Complete tables of specifications (capacities, sizes, and pipe connections) as well as pressures and weights are included.

Technical data is also given on company's strainers for pressure regulating valves and metering devices, liquid and gas lines.

Bul 154 is available from Steam Specialties Division, The V. D. Anderson Company, Dept. CP, 1935 West 96th St., Cleveland 2, Ohio. When inquiring specify CP 1931 on handy form, pages two and three.

Hypothetical problems aid selection of heating, air conditioning units

Two 40-page catalogs—one on commercial and industrial heating and ventilating units, the other on air conditioning units — are designed to aid plant engineers in planning, specifying, and ordering proper units to solve problems involving moving, heating, or cooling of air. Each catalog is divided into five data sections: descriptive, performance, layout, engineering, and service.

Heating and ventilating units are covered with air volumes ranging from 1200 to 23,000 cfm, heating capacities from 100,000 to 2,500,000 Btuh. Air conditioning units range from 1200 to 21,000 cfm air volume; cooling capacity from 20,000 to 2,000,000 Btuh.

Cat 1620 (heating and ventilating units) and Cat 1630 (air conditioning units) are available from Dept T-126, Sturtevant Division, Westinghouse Electric Corporation, Dept. CP, 200 Readville Street, Boston 36, Mass. When inquiring specify CP 1932 on handy form, pages 2 and 3.

No filter cloth or mesh on sludge filter

Continuous vacuum filter for dewatering sewage solids is described in four-page illustrated bulletin. Designed to replace sludge drying beds, filter has alloy-steel coiled springs as filter medium, doing away with filter cloth or mesh.

Photographs and drawings illustrate installations, construction, and operation. Table lists sizes of ten available models. Filtering areas range from 85 to 500 sq ft.

Bul 102 is issued by Komline-Sanderson Engineering Corporation, Dept. CP, Peapack, N. J. When inquiring specify CP 1933 on handy form, pages two and three.

Radioactive polonium and brush remove static charges, dust

Illustrated sheet describes brushes which contain polonium units to neutralize static electricity charges and dust particles.

"Staticmaster" is issued by Gardner Laboratory, Inc., Dept. CP, 4723 Elm St., Bethesda 14, Md. When inquiring specify CP 1934 on handy form, pages two and three.

Pumping, spraying and transfer of fluids described

Illustrated 32-page catalog covers equipment used to pump semi-solids and fluids from containers to point of application. This includes pumps, spray guns, pipes, hose, agitators, etc. Section on accessories includes data on follower-plates, powered agitators, pressure regulators, air consumption rates, compressors, and other operational requirements. Examples of material handling in extrusion, spraying, transfer and packaging are included.

Cat 35-12 is issued by the Alemite Div. of Stewart-Warner Corp., Dept. CP, 1826 Diversey Pkwy., Chicago 14, Ill. When inquiring specify CP 1935 on handy form, pages 2 and 3.

Tells uses for methyl bromide

Purpose of informational catalog is to acquaint trade with uses found for methyl bromide in recent years. Literature also announces production of company's M-B-C fumigant (methyl bromide containing chloropicrin as a warning agent) for use in such places as flour mills.

Catalog on methyl bromide fumigant is issued by Agricultural Chemicals Dept., Eston Chemicals Div., American Potash & Chemical Corp., Dept. CP, 3100 E. 26th St., Los Angeles 23, Calif. When inquiring specify CP 1936, pages 2 & 3.

Chromatography, electrophoresis apparatus shown in catalog

Comprehensive presentation of most recent developments in apparatus and equipment for chromatography and paper electrophoresis is made in 14-page, two-color catalog.

Cat AC-54 is issued by Schaar and Co., Dept. CP, 754 W. Lexington St., Chicago 7, Ill. When inquiring specify CP 1937, pages 2 & 3.

Shows concentrating tables for classifying minerals

Concentrating tables for separating ores and mineral concentrates are pictured and described in 12-page bulletin. Drawings, flow charts, and tables show typical applications for equipment. Materials which can be recovered at coarse sizes preceding flotation include base metals, gold, silver, tungsten, tin, and copper. Accessory equipment is also discussed. Included are hydraulic classifiers, mineral jigs, spiral concentrator, sand pumps, and automatic samplers.

Bul T1-B3 is issued by Denver Equipment Company, Dept. CP, 1400 Seventeenth Street, Denver 17, Colorado. When inquiring specify CP 1938 on handy form, pages 2 and 3.



**GUARD AGAINST
DOWN TIME
WHEN PRESSURES ARE UP
With Watson-Stillman
Forged Steel Fittings . . .**

The high cost of down time in today's high pressure processing and power plants demands careful selection of piping materials. This goes *double* for the fittings.

WATSON-STILLMAN FORGED STEEL FITTINGS give you maximum protection against high pressure, heat, corrosion, shock and vibration—elements often responsible for piping failures.

All W-S Carbon Steel Fittings are drop forged to produce the well-known forged-fiber structure with exceptionally high tensile and impact strength. They're designed for high strength, too, with extra heavy walls where you need them. And they're precision machined for perfect alignment.

Watson-Stillman Fittings are also available in forged stainless and alloy steels for exceptional service at high and low temperatures and for maximum resistance to corrosion.

For strong, tough, trouble-free joints—for safe, dependable operation of your piping system—specify W-S Forged Steel Fittings. Available in sizes $\frac{1}{2}$ " to 4" in both SCREW-END and SOCKET-WELDING types. Write for information today.

Sold Through Leading Distributors

WATSON-STILLMAN FITTINGS DIVISION
H. K. PORTER COMPANY, INC.

Roselle, New Jersey



When inquiring check CP 1939 on handy form, pgs. 2-3

A revolutionary new principle
in Coolers ...

THE
holo-flite *
(HOLLOW-FLITE) PROCESSOR

Backed by the same well-known organization that pioneered COTTRELL Precipitators, MULTICLONE Collectors and other leading products, the HOLO-FLITE Processor represents a far-reaching advancement in the science of heat-exchanger design. Widely adaptable to various types of cooling and similar applications in industrial processing operations, the HOLO-FLITE handles powdered or granular solids, moist pastes or slurries with equal facility. Moreover, it requires as little as 1/5th the space of other heat exchangers ... causes no dust, therefore requires no costly or complicated auxiliary recovery equipment ... and maintains its uniformly high efficiency under modern continuous-flow operations (no stop-and-go "batching" operations are necessary).



Unique Simplicity

Basically, the HOLO-FLITE consists of two or more hollow intermeshing conveyor screws that slowly rotate in a trough or tube. The cooling agent circulates through the hollow flights and shafts of the conveyor screws while the product itself "flows" in the trough where it is constantly rotated into, around, over and under the moving heat-exchange surfaces. The continuous mixing, turning, folding action causes a constant change of contact with the heat-exchange surfaces and results in a high rate of heat transfer. Yet the action is so gentle that there is no dusting and little, if any, abrasion of crystalline particles.

Unlimited Capacity

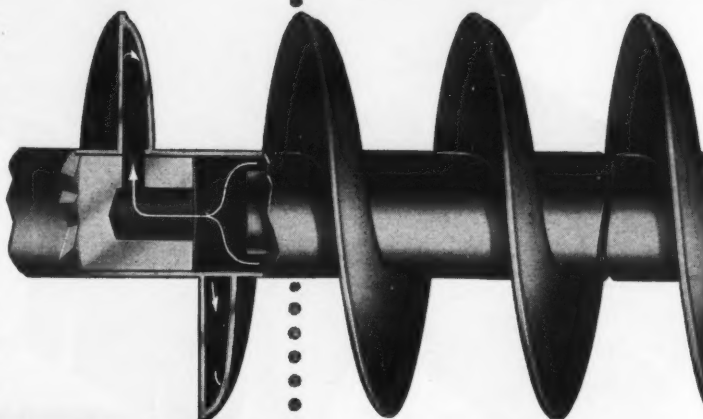
HOLO-FLITE Processors can be readily adapted to virtually any capacity requirement and are in daily operation on such varied products as sand, cement, cottonseed cake, soybean meal, borax, salt, sugar, baby foods, and many other products. Cooled products can be packaged directly from the HOLO-FLITE discharge, saving time, space and additional handling.

Be sure to investigate HOLO-FLITE savings before you install heat-exchange equipment. To insure maximum operating efficiency at low overall cost, each installation is individually engineered to the job using basic stock-size elements. Contact the nearest Western Precipitation office for further details on the revolutionary HOLO-FLITE Processor—or write direct!



FREE! New 8 Page Bulletin describing HOLO-FLITE features and applications will gladly be sent on request!

- ▶ Handles Pastes, Sludges or Solids!
- ▶ Up to 80% Saving in Space!
- ▶ Permits Continuous, High Efficiency Operation!



A FEW OF MANY HOLO-FLITE ADVANTAGES

WIDE ADAPTABILITY: HOLO-FLITE handles fine-grained, crystalline or powdered solids, pulps, pastes and slurries with equal ease. Heat transfer agent can be refrigerant, cooled or ambient water, or other fluids to provide a wide range of processing temperatures.

SPACE-SAVING COMPACTNESS: Because of its large active heat-transfer surface per cubic foot of space required, the HOLO-FLITE requires only a minimum of space—is 5 to 6 times as compact as other equipment of comparable capacity!

LOW POWER REQUIREMENTS: HOLO-FLITE conveyor screws rotate slowly—usually only 1 to 12 r.p.m. Further, multiple tiers can be driven by one motor, assuring low power consumption.

INSTALLATION FLEXIBILITY: The basic HOLO-FLITE unit is two intermeshing screws in a single trough, but four or six screws per trough can also be installed. Moreover, any number of troughs can be "tiered" on top of one another—trough lengths can be varied from 8 to 20 ft.—screw diameters can be varied from 7" to 16"—to provide virtually any desired capacity in a minimum of space!

Write for full details on the many savings the HOLO-FLITE Processor can bring to your particular applications.

WESTERN

Precipitation

CORPORATION

DESIGNERS AND MANUFACTURERS OF EQUIPMENT FOR COLLECTION OF SUSPENDED MATERIALS FROM GASES & LIQUIDS

Main Offices: 1023 WEST NINTH STREET, LOS ANGELES 15, CALIFORNIA
CHRYSLER BLDG., NEW YORK 17 • 1 N. La SALLE ST. BLDG., CHICAGO 2
1429 PEACHTREE ST. N.E., ATLANTA 5 • HOBART BLDG., SAN FRANCISCO 4
PRECIPITATION CO. OF CANADA, LTD., DOMINION SQ. BLDG., MONTREAL

NEW LITERATURE

Steel columns up to 48" ID lined with glass

Glassed steel columns, built in accordance with ASME code, are described in four-page bulletin. Columns are lined with glass which resists all acids except hydrofluoric, even at elevated temperatures and pressures, and alkaline solutions up to pH 12 at 212°F.

Sectional drawings illustrate how columns are assembled. Standard dimensions are shown for 12 ID sizes ranging from two to 48 inches. Columns are rated for 25 psi internal pressure and full vacuum. Units can be custom-built for higher pressures.

Bul 907 is issued by The Pfaudler Company, Dept. CP, 1000 West Avenue, Rochester 3, New York. When inquiring specify CP 1941 on handy form, pages 2 and 3.

Describes service applications of wedge gate valves

Service applications and details of construction on iron-body wedge gate valves are given in condensed catalog. Various models of valves and their working pressures are listed.

Bul 107 is available from Kennedy Valve Mfg. Co., Dept. CP, 1069 E. Water St., Elmira, N. Y. When inquiring specify CP 1942 on handy form, pages 2 and 3.

Cartoons emphasize maintenance of air and hydraulic units

Pocket-size manual deals with subject of air and hydraulic equipment maintenance in cartoon style. Approach used is more or less exaggerated. Emphasis is placed on some major reasons for unsatisfactory performance and steps which can be taken to avoid such conditions.

"The ABC's on Maintenance of Air and Hydraulic Equipment" is available from Logansport Machine Co., Inc., Dept. CP, 835 Center Ave., Logansport, Ind. When inquiring specify CP 1943 on handy form, pages 2 and 3.

Optical emission quantometers covered in two-color bulletin

Illustrated eight-page bulletin gives specifications and descriptions of three models of optical emission quantometers. Opening pages of publication explain analyses suitable for unit and points out advantages of system.

Bul on optical emission quantometers is issued by Applied Research Laboratories, Dept. CP, 3717 Park Place, Glendale 8, Calif. When inquiring specify CP 1944, pages 2 and 3.

NEW LITERATURE

Includes up-to-date information on analysis of alkalis

Fourth edition of technical and engineering service bulletin includes many up-to-date additions on the analysis of alkalis. Analytical factors have been recalculated on the basis of 1952 International Weights. New colorimetric methods for iron and nickel, and procedures for analysis of caustic soda-sodium nitrite compounds have been included.

Bul 9 is available from Solvay Process Div., Allied Chemical & Dye Corp., Dept. CP, 61 Broadway, New York 6, N. Y. When inquiring specify CP 1945 on handy form, pages 2 and 3.

Still capacity increased 31% by wire-mesh section

Details of how capacity of vacuum still was increased 31% at a Wyoming refinery are given in four-page case history. Complete with charts, drawings, and operating conditions, booklet tells how installing a stainless steel wire mesh section cut down entrainment of asphalt in the gas-oil overhead when still operates at increased rates.

Case Study 1001 is issued by Otto H. York Company, Inc., Dept. CP, 69 Glenwood Place, East Orange, New Jersey. When inquiring specify CP 1946 on handy form, pages 2 and 3.

Advantages of upward-acting doors compared in 32-page bulletin

Helpful information in comparing advantages of different styles of upward-acting doors is presented in 32-page bulletin. Dimensional information necessary in planning use of such doors is included. Photos and drawings supplement text.

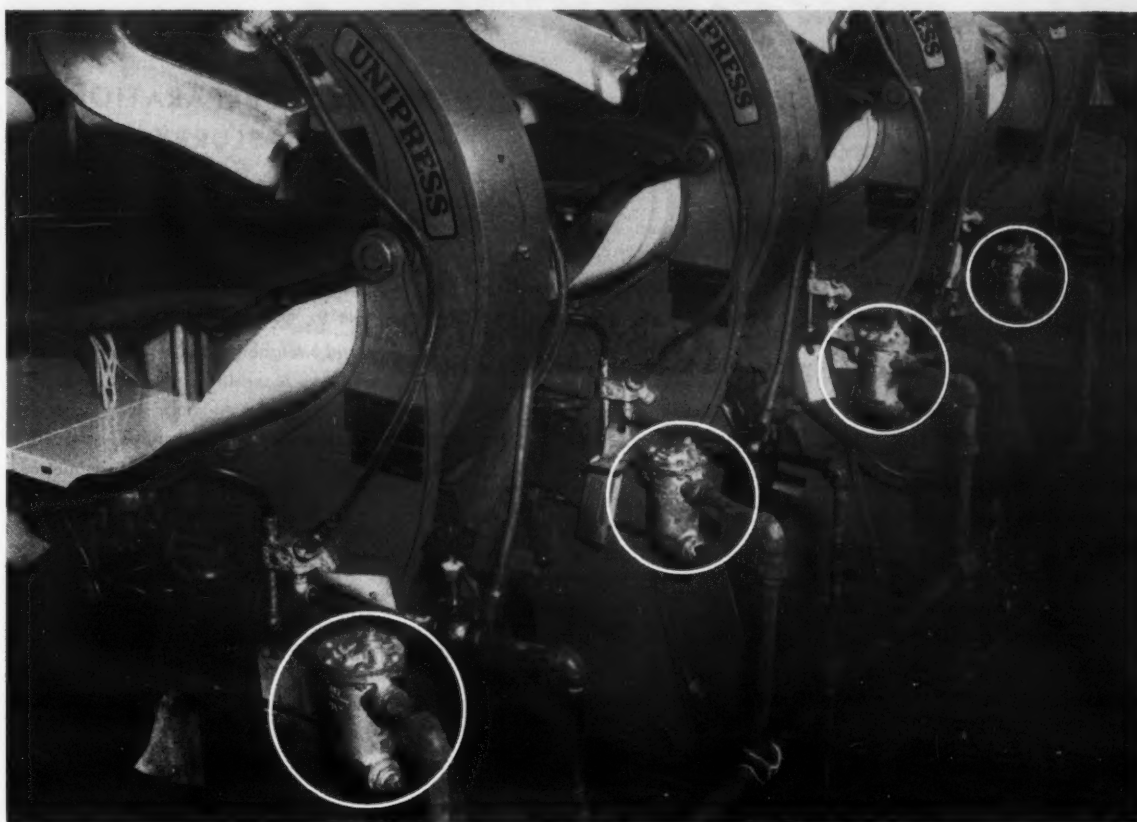
Bul 79 is available from The Kinnear Manufacturing Company, Dept. CP, Fields Ave., Columbus 16, Ohio. When inquiring specify CP 1947 on handy form, pages 2 and 3.

Describes industrial propellers in mixing, pumping, blending

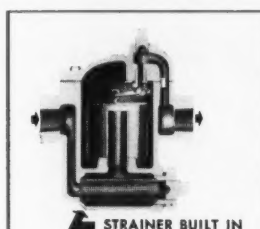
General specifications of company's line of mixing propellers for industrial use are presented in eight-page bulletin. Units are illustrated and characteristics with respect to various materials are given in tabular form. Propellers described are for agitating, mixing, blending, and pumping. They are available in a variety of materials including bronze, stainless steel, and aluminum.

Form IP is issued by Michigan Wheel Company, Dept. CP, Grand Rapids 3, Mich. When inquiring specify CP 1948 on handy form, pages 2 & 3.

You can't save money by skimping on Steam Traps — An Armstrong Trap on every unit always pays dividends



Plant doubles production without appreciable increase in fuel costs



Built-in Strainer Traps save fittings, labor, maintenance. Cost less than separate trap and strainer. Complete data in literature mentioned below.



When Standard Coat, Apron & Linen Service took over a previous linen service plant in Portland, Maine, the boilers could hardly handle the steam load. Mr. Tom Foley, General Mgr. called Files Steam Specialty Company, Armstrong Trap Representative in New England, to help correct the condition.

Under supervision of Mr. Ken Raymond, Chief Engineer, Armstrong traps were installed on *each unit* in the plant.

Results: doubled production with no appreciable increase in fuel consumption; higher machine

temperatures; boilers easily handle the load.

This is a typical example of the efficiencies and economies possible through Armstrong unit trapping. Could your plant stand a shot in the arm? Call your Armstrong Representative, or write:

ARMSTRONG MACHINE WORKS
880 Maple Street, Three Rivers, Michigan

SEND FOR FREE CATALOG

—The "Steam Trap Book" contains 44 pages of trap data—selection, maintenance, troubleshooting. Free on request. Or Consult Sweets or CEC.



ARMSTRONG STEAM TRAPS

When inquiring check CP 1949 on handy form, pgs. 2-3

DRY FEED **SYNCHRONIZED** **LIQUID FEED** Automatic System **FOR CONTINUOUS PREPARATION OF FILTER AID SLURRY**

Filtration — an increasingly important operation in the food, petroleum, pharmaceutical, and chemical industries — is put on a mechanized basis with this "packaged" system for preparing filter aid slurry . . . one of the many Omega Feeding and Proportioning Systems available to industry today.

This system feeds finely pulverized filter aid (weighing 7 to 15 lbs. per cu. ft.) in step with the flow of process liquid to the filters. A sensitive synchronizing unit maintains the pre-selected ratio of dry material to liquid . . . keeps slurry concentration at the optimum level . . . eliminates hit-or-miss, high-cost manual preparation. It's an Omega System throughout — from the Model 50-8 Belt Gravimetric Feeder (accurate within $\pm 1\%$ by weight) to the mixing tank, dust and vapor removal devices, synchronizing mechanism, and control panel. The design and construction of this "packaged" system is 100% an Omega responsibility which relieves the customer of the purchasing and engineering of individual components.



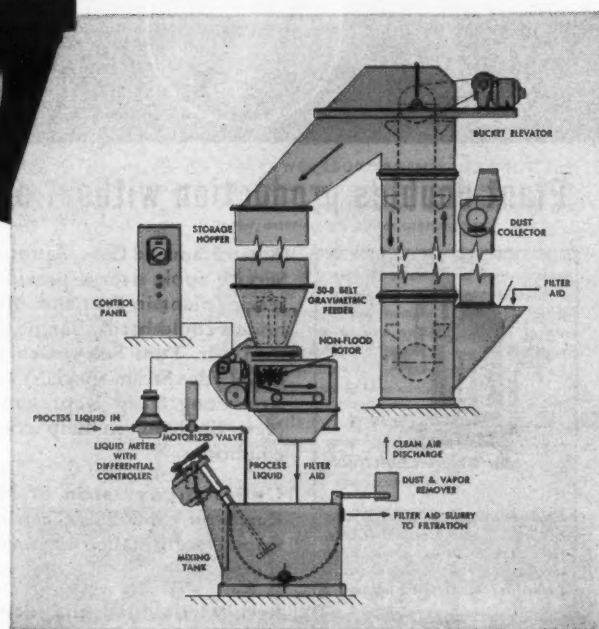
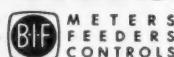
Omega Dry and Liquid Feeders fit into the widest range of continuous processing and blending operations. Tell us about your problems and we will gladly submit recommendations and quotations. Omega Machine Company (Division of B-I-F Industries, Inc.), 387D Harris Ave., Providence 1, Rhode Island.

Continuous slurry preparation system including Omega 50-8 Belt Gravimetric Feeder with positive, non-flood feeding mechanism; mixing tank and agitators; dust collector, bucket elevator, storage hopper; control panel and differential controller.



OMEGA THE LAST WORD IN FEEDERS

DIVISION OF B-I-F INDUSTRIES, INC. BUILDERS IRON FOUNDRY • PROPORTIONERS, INC. • BUILDERS-PROVIDENCE, INC.



When inquiring check CP 1950 on handy form, pgs. 2-3

NEW LITERATURE

Demineralization discussed in 24 pages

Demineralization is given comprehensive treatment in 24-page bulletin. Chemical and mechanical factors entering into design and operation of demineralizing plants are explained. Comparison of costs per 1000 gal of treated water is made between single and triple effect evaporators, vapor compression stills, and demineralization. Costs in cents per 1000 gal net water to service can be read directly off easy-to-read curve, using information derived from chemical conversion tables and procedure outlined.

Two-page chart presents diagrams of six modifications of three basic demineralizers, along with applications and relative advantages. Cation and anion exchange resins, together with acids and alkali regenerants, are described. Flow charts show demineralization systems for chemical plants and power plants.

Bul WC-111 is issued by Graver Water Conditioning Company, a division of Graver Tank and Manufacturing Company, Inc., Dept. CP, 216 West 14th Street, New York 11, New York. When inquiring specify CP 1951 on handy form, pages 2 and 3.

Data sheet gives specifications on recording spectrometer

Operation and design features of recording Raman spectrometer are given in four-page data sheet. Schematic diagrams of optical and electronic systems are used with photographs of actual unit to explain operation.

Data Sheet 10.16-8a is issued by Industrial Div., Minneapolis-Honeywell Regulator Co., Dept. CP, Wayne and Windrim Avenues, Philadelphia 44, Pa. When inquiring specify CP 1952 on handy form, pages 2 and 3.

Material handling systems described in illustrated brochure

Illustrated 32-page booklet describes specific industrial examples of engineered material handling systems. Examples include complete handling system for bulk chemicals, drum-handling in chemical processing, bulk grain handling for brewing industry and others.

Technical information is included on enclosed elevator for handling chemicals. Section on mechanical methods of transferring or feeding bulk materials includes illustrations and text on nine elevators, conveyors, and feeders. Concluding pages give details of free bulk-test service which invites submission of samples of bulk materials to determine most efficient way of handling.

Bul 400 is issued by Gifford-Wood Co., Dept. CP, Hudson, N. Y. When inquiring specify CP 1953 on handy form, pages 2 and 3.

NEW LITERATURE

Lists resin emulsions for textile finishing

Brochure lists and describes aqueous resin dispersions used in textile industry to improve the handle, appearance, and quality of a wide variety of fabrics. These emulsions deposit clear colorless films which enhance the brilliance of dyed or printed fabrics. Summarized in the 18-page booklet are physical and chemical characteristics and applications of the emulsion polymers.

"Polymers for Textiles" is issued by American Polymer Co., division of The Borden Co., Dept. CP, 101 Foster St., Peabody, Mass. When inquiring specify CP 1956, pages 2 and 3.

Shows how to save warehouse space

Rotary calculator shows aisle width required for right-angle stacking with all types of fork trucks, area devoted to aisles in sq ft and savings made possible in cu ft of storage space.

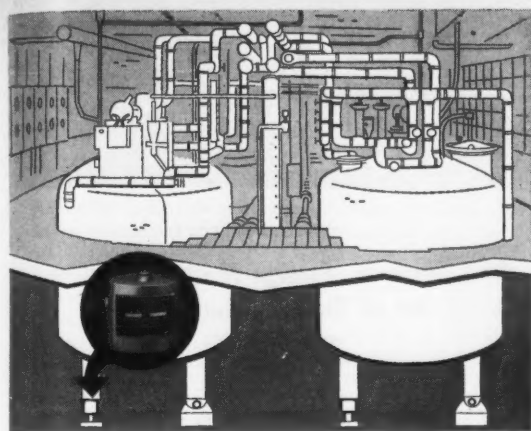
Space wheel is issued by Lewis-Shepard Products, Inc., Dept. R-49, Watertown, Mass. When inquiring specify CP 1957 on handy form, pages 2 and 3.

Bulletin describes water softeners

Three-stage reactors for softening surface waters are shown in bulletin. Units are also recommended for all precipitation and absorption processes involving cold water.

Other uses are for lime or lime-soda softening of hard water, dealkalization and coagulation of surface water as pre-treatment to ion exchange or hot process softeners, or for removal of silica from water by adsorption with ferric hydroxide, magnesium oxide or other hydroxides in the sludge.

"American Reactors" is issued by American Water Softener Co., Dept. CP, 4th and Lehigh Streets, Philadelphia, Pa. Specify CP 1958, pages 2 and 3.



Baldwin SR-4® load cells permit remote and automatic control of latex "batching"

To weigh liquid latex directly in the processing tanks, this leading rubber company sought a method which would require very little head room, use a minimum of steel and control various steps of each batch with $\frac{1}{2}$ of 1% accuracy.

This problem was solved by installing a Baldwin SR-4 weighing system. The SR-4 cells' small size, rugged construction and absence of

moving parts made it possible to meet each requirement set by the customer. The electrical nature of the SR-4 cells also made possible remote location of the indicating-controlling instrument.

Write for our two new booklets on tank weighing (No. 4106) and crane scales (No. 4105). Address: Dept. 3106 Baldwin-Lima-Hamilton Corporation, Philadelphia 42, Pa.

BALDWIN-LIMA-HAMILTON

Philadelphia 42, Pa. • Offices in Principal Cities
In Canada: Peacock Bros., Ltd., Montreal, Quebec

When inquiring check CP 1954 on handy form, pgs. 2-3



with SPO air vibrators

Bins, hoppers, chutes equipped with SPO will always flow! There is no clogging or packing of powdered or granular materials.

While low in cost, SPO air vibrators are built for continuous hard use and incorporate a special corrosionproof cylinder liner. Types and sizes are available to meet every vibration need.



SERIES 81

Write for Bulletin 50 for complete details.

1960-61

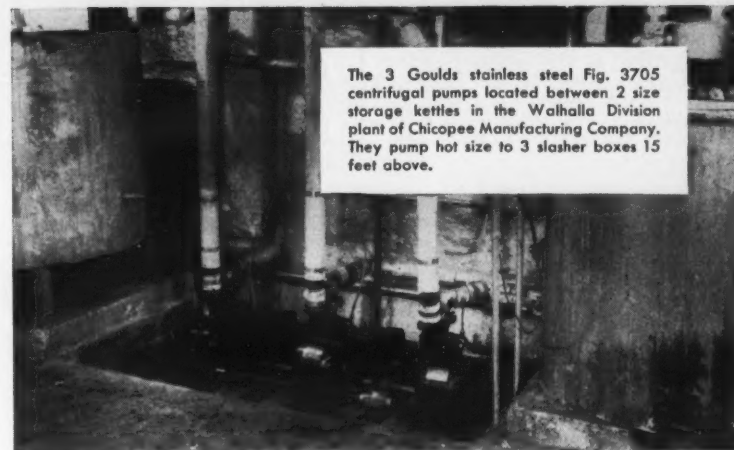


SPO INCORPORATED

6531 GRAND DIVISION AVENUE • CLEVELAND 25, OHIO

When inquiring check CP 1955 on handy form, pgs. 2-3

AUGUST, 1954



The 3 Goulds stainless steel Fig. 3705 centrifugal pumps located between 2 size storage kettles in the Walhalla Division plant of Chicopee Manufacturing Company. They pump hot size to 3 slasher boxes 15 feet above.

Stainless steel pumps economize handling of hot, sticky size

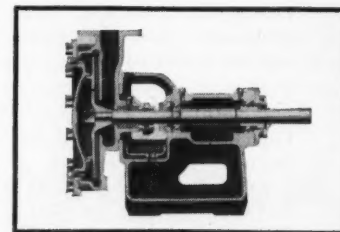
The sticky, glutinous size used to "fill" such fabrics as print cloths and sheeting poses a tough problem in liquid handling.

It must be handled hot (over 200° F.), and that's rough on pump packing and parts. All in all, it's just a disagreeable material to work with.

The Chicopee Manufacturing Company's Walhalla Division, weavers of many "filled" fabrics, maintains a constant 24-hour-a-day flow of hot size with three Goulds Fig. 3705 stainless steel pumps.

In the more than 3 years these pumps have been in operation there has been no replacement of parts, and what used to be a weekly job—repacking—has been eliminated. Loss of size through leakage at the pump also has been stopped.

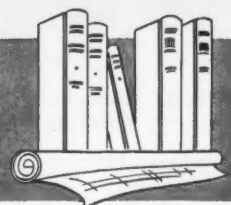
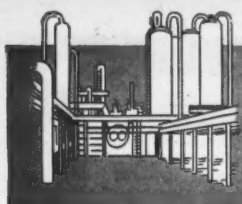
Just as Goulds Fig. 3705 stainless steel pump is designed for exacting chemical service, there's a Goulds pump for practically every industrial pumping need. The experience and knowledge of Goulds engineers, with a background of 107 years of pump manufacturing to draw on, is available to you. Let us help you make sure of getting the pump that matches your specific requirements. Just drop a line to GOULDS PUMPS, INC., Seneca Falls, New York.



Cross-section of Fig. 3705 pump showing how stuffing box is subjected to suction pressure only. Impeller can be cleaned, or removed and replaced, without disturbing piping connections. For additional details, ask for Bulletin 725.3.



When inquiring check CP 1959 on handy form, pgs. 2-3



Finding Limiting Velocity in LIQUID ENTRAINMENT SEPARATORS

By ROBERT HLAVIN

Edited By D. S. DAVIS
Virginia Polytechnic Institute

Entrained liquid droplets can be separated from vapor streams by wire mesh mist eliminators. But there is a critical velocity of vapor above which liquid is carried through the separator and re-entrained. This limiting velocity is a function of liquid and vapor densities and can be expressed as:

$$U = 0.35 \sqrt{\frac{\rho_v - \rho_L}{\rho_v}}$$

where:

U = maximum allowable vapor velocity at wire mesh under operating conditions fps

ρ_L = liquid density lb/cu ft

ρ_v = vapor density lb/cu ft

Nomograph presented here provides a fast, convenient solution to this equation.

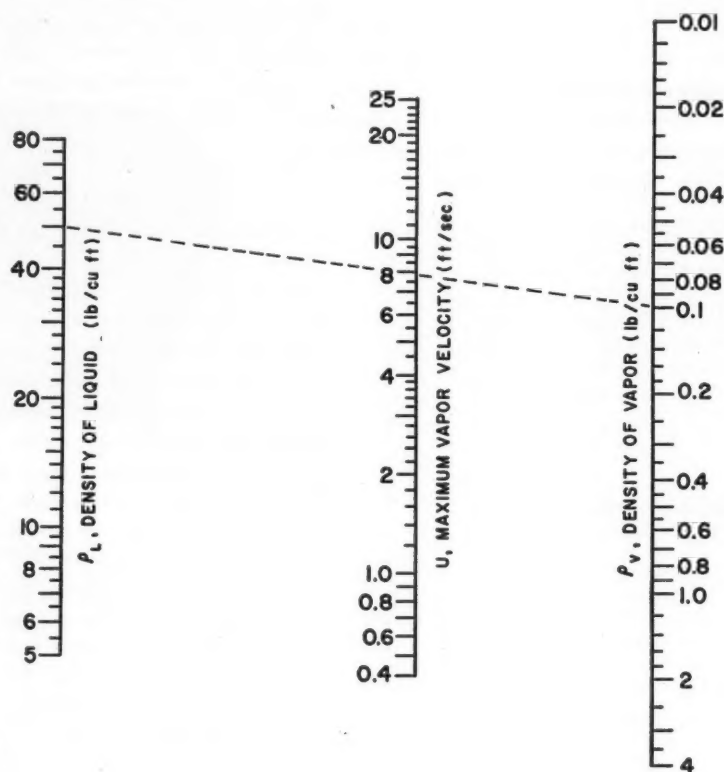
Typical Example

Liquid with a density of 50 lb/cu ft is entrained in a vapor with a density of 0.1 lb/cu ft. What is the maximum vapor velocity through a wire mesh separator for good performance?

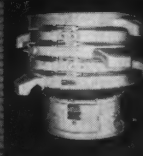
Connect 0.1 on the vapor density scale with 50 on the liquid density scale. Read maximum allowable velocity as 7.8 feet per second.

LITERATURE CITED

¹Yorkmesh Demister Bulletin 13



SCREENING NEWS



Helpful information on screening and separating operations
...from field reports of SWECO SEPARATOR District Engineers

Wax Stays in, Foreign Matter Comes Out of Shellac Solution

Clearing a shellac solution of 5% undissolved solids, such as dirt, bark and insect bodies, without also removing the wax, presented a problem to an Oregon chemicals firm. An 18" dia. SWECO vibrating screen separator handled the assignment, screening the solution (crude shellac in a 1% soda ash solution.) Company now obtains the desired clearance of foreign matter, using 100-mesh screen cloth. Solution weighed approximately 65-70 lbs. per cu. ft., with specific gravity of 1.04 to 1.12.

Barium Ore Processor Finds Double Job for SWECO

Barium Products, Ltd., Modesto, Calif. major producer barium ore and barium compounds has found the SWECO separator so versatile that they use both one- and two-deck models at various processing stages. On one 48" diameter single-deck SWECO (pictured at right), they screen both barium oxide grinding material (plus 40-mesh desired) and lamp black (minus 20-mesh desired). Complete adjustability, on-the-job... by quick-changing screens, adding decks, adjusting eccentric weights... makes the SWECO the most versatile screen separator on the market.



At another processing stage, same company uses a two-deck SWECO separator to screen 180-lb-per-cubic-foot barite ore at throughput rate of 10 TPH to minus-10 mesh.

Separation of solids from brine-potash solution

"Very gratifying" was the verdict of a Texas chemicals firm after using a SWECO vibrating screen separator to remove solids from a highly corrosive brine-potash solution. Need was particularly urgent because the solution was so corrosive that the company was incurring heavy expenses in scraping, painting and replacing steel plates in the classifiers. Initial demonstration, using 20-mesh cloth, was very satisfactory. Company now has two 48" diameter SWECO vibrating screens, uses a range of cloths: 16, 20, 30, and 35 mesh.

Free screening analysis and recommendations...
SWECO District Engineers are available to make detailed analyses and recommendations on specialized screening operations without cost to you.

SEND FOR DATA FILE No. 8-3

Detailed information on applications of SWECO Screen Separators.



**SOUTHWESTERN
ENGINEERING
COMPANY**

4800 Santa Fe Ave., Los Angeles 58
JEfferson 7131 - Cable: swscola

Engineers and Constructors... Manufacturers

When inquiring check CP 1960 on handy form, pgs. 2-3

CHEMICAL PROCESSING

NEW LITERATURE

Details on tubular electric heaters

Component parts of tubular electric heaters, including pipe, resistors, insulators, strap and terminal box, are illustrated and described in four-page bulletin. Units have wide application for heating heavy oils and other viscous liquids in tanks and pipe lines. Text also explains characteristics of electric heating and operating comparisons with steam on these services.

Bul 202 is available from Hynes Electric Heating Div., Turbine Equipment Co., Dept. CP, P. O. Box 578, Westfield, N. J. When inquiring specify CP 1961 on handy form, pgs. 2 & 3.

Shows operating details of pneumatic transmitter

Close-up photos on data sheet illustrate pressure gage-pneumatic transmitter mechanism. Full data are provided on capacities, pressures, materials of construction as well as operating details. Suggested installation methods are also included.

Bul 1025 is issued by Penn Industrial Instrument Corp., Dept. CP, 4110 Haverford Ave., Philadelphia 4, Pa. When inquiring specify CP 1962 on handy form, pgs. 2 & 3.

Covers preheater tubes with ceramic coating

How maintenance of air preheaters has been reduced by the application of a ceramic coating on units is described in four-page bulletin.

Cat 3154 is issued by Barrows Porcelain Enamel Co., Dept. CP, Langdon Rd. & Pennsylvania R. R., Cincinnati 13, Ohio. When inquiring specify CP 1963 on handy form, pgs. 2 & 3.

For more information on product at right, specify CP 1964 ... see information request blank between pages 2 - 3.



Why accept frequent furnace repairs and production losses as "routine"? Today, there's one . . .

Sure way to avoid shutdowns

WHAT CAUSES MOST REFRACTORY FAILURES? Usually one small area is at fault. A spot that had to take more abuse than the rest of the furnace . . . and couldn't. Couldn't because it was made of the same refractories as the rest of the furnace. Couldn't because it was not protected by materials *specifically designed* to resist corrosion . . . or flame impingement . . . or erosion . . . or extreme heat . . . or whatever combined conditions caused the localized failure.

That's where CARBORUNDUM's super refractories fit in. These products are "custom designed" to do what's above-and-beyond other refractories. They are the "armor plate" agents, designed to make emergency furnace breakdowns a rarity.

THEY ARE ALSO ENTIRELY DIFFERENT. Some of their properties have no inherent connection with ordinary refractories. For example, the diamond-like hardness of silicon carbide, which gives it superior wear resistance. Or the corrosion resistance of electric furnace mullite. Or the chemical stability of aluminum oxide.

They're also very different, one from another. Some conduct heat very rapidly. Others insulate. Some are made of bonded grain, others of bubbles or hollow spheres bonded together. Still others are cast, like metals, into an impervious, ivory-like structure. But all are inherently strong, resistant to extreme heat,

and highly durable. And each, in its place, can pretty much eliminate emergency shutdowns, and extend on-line time.

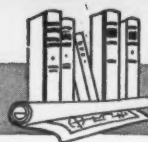
WE'D LIKE TO WORK WITH YOU toward this end. Our engineers know what materials to apply—and where. For theirs is the experience of the world's largest supplier of super refractories. As a starter, send the coupon.

CARBORUNDUM
Registered Trademark

Dept. S-84, Refractories Division
The Carborundum Co., Perth Amboy, N. J.

- ☐ As a starter, send literature only.
☐ I'd like first-hand information. Please phone for appointment.

Name _____ Position _____
Company _____
Address _____



Properties of BENZENE-TOLUENE-XYLENE MIXTURES

By GEORGE E. MAPSTONE and J. T. MUNDAY

Edited by D. S. DAVIS
Professor of Chemical Engineering
Virginia Polytechnic Institute

This nomograph can be used to find specific gravity and boiling point of mixtures of benzene, toluene, and xylene.

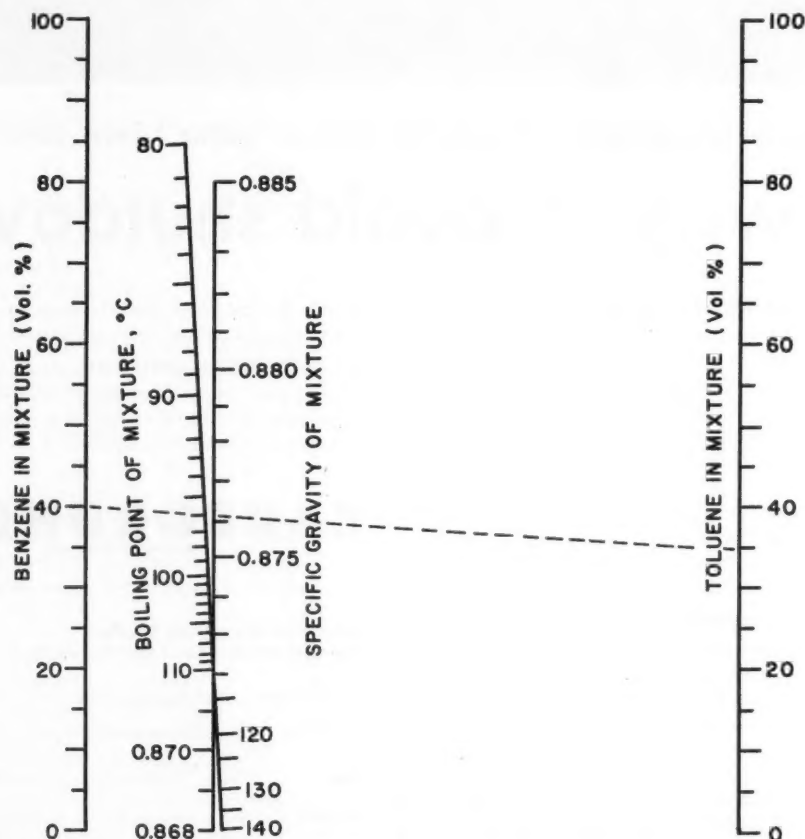
Typical Example

What is the specific gravity and boiling point of a mixture containing 40 per cent benzene, 35 per cent toluene, and 25 per cent xylene?

Find percentage of benzene and toluene on appropriate scales. When these points are connected by a straight line, it will intersect boiling point and specific gravity scales to show that specific gravity is 0.8762 and boiling point is 96°C.

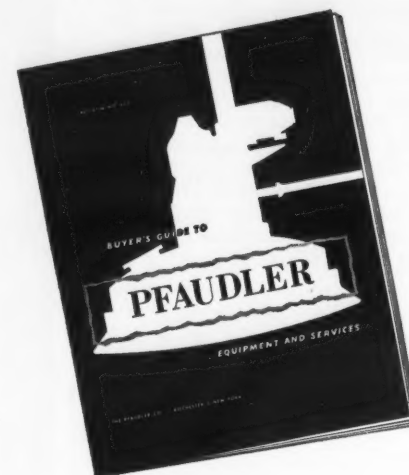
LITERATURE CITED

¹"Standard Methods for Testing Tar and Its Products," STPTC, London, 2nd Ed., (1938).



Chemical Processing — August 1954

12-PAGE BUYER'S GUIDE



shows complete line of processing equipment and services

Contains pictures and data, valuable information on how you can get special help in selecting materials and designs for processing equipment.

Saves you time, when new equipment is needed quickly for a new or revised process.

PARTIAL LIST OF CONTENTS

- How to get process engineering help
- Reactors—glassed steel and stainless steel
- Custom-built alloy equipment
- Characteristics of glassed steel
- Heat exchangers and columns
- Glassed steel pipe, fittings, valves, etc.
- Evaporation equipment
- Facilities available at Pfaudler factories

If you don't already have a copy of the "Buyer's Guide to Pfaudler Equipment and Services," mail the coupon and we'll send you one immediately.

Pfaudler

THE PFAUDLER CO., Dept. CP-8 Rochester 3, N. Y.

Please rush me a copy of the Buyer's Guide to Pfaudler Equipment and Services.

Name _____

Title _____

Company _____

Address _____

City _____ Zone _____ State _____

When inquiring check CP 1965 on handy form, pgs. 2-3

CHEMICAL PROCESSING

NEW LITERATURE

Notes on mineral dressing

Properties and applications of various chemicals used in ore beneficiation plants and processes are described in bulletin. Literature contains sections on flotation practice for metallic ores, and a summary of flotation methods used for treatment of non-metallic minerals. Tables summarizing use and handling of flotation chemicals and a flotation bibliography are also included.

"Mineral Dressing Notes" (bul 20) is available from Mineral Dressing Dept., American Cyanamid Co., Dept. CP, 30 Rockefeller Plaza, New York 20, N. Y. When inquiring specify CP 1966 on handy form, pages 2 and 3.

De-sugared calcium lignosulfonate described in folder

Physical and chemical characteristics of forest product de-sugared calcium lignosulfonate, together with a list of present and suggested applications, are contained in four-page folder.

Folder on Toranil is available from Lake States Yeast Corp., Dept. CP, Rhinelander, Wis. When inquiring specify CP 1967, pages 2 and 3.

Are you wondering why many of these editorial articles give . . .

Manufacturer's Name and Address . . . ?

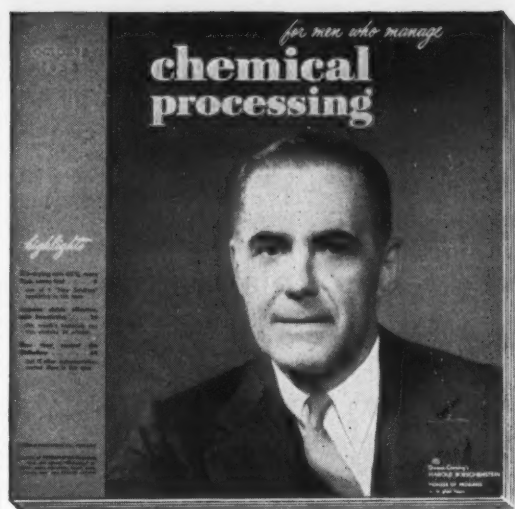
You doubtless have noted names and addresses of manufacturers at the end of many editorial articles in CHEMICAL PROCESSING. Have you wondered, "Is this some sort of advertising?"

No, that "source" is there because the editors know that often you want more information, quickly and easily. Of course, such articles are purely editorial material which has been selected by the editors as being worthy of your attention . . . (it is **not** carried with any responsibility to the manufacturer nor does it obligate the manufacturer). This is strictly a service for you . . . the reader.

We know that many readers often want more than just the pertinent description and facts . . . so we tell you where and how you can obtain complete details, either by writing direct or using the handy Reader Service slip.

This is one of our extra Reader Services, pioneered in this field by CHEMICAL PROCESSING in 1938.

THE EDITORS



Have you wondered
why this magazine
comes to you

...without charge?

MAYBE, LIKE MANY others, you've always thought that all publishers make their money, or much of it, from the subscriptions they sell.

'Tisn't so . . .

. . . no, 'tisn't so. With the exception of a few general magazines (e.g. READER'S DIGEST) that sell hundreds of thousands — some millions of copies — most industrial publishers with relatively small circulations actually lose money on their subscription sales.

Then how do industrial publishers make money? As you can guess, they make it from the advertising they sell. *Total subscription sales are hardly a "drop in the bucket" compared to advertising revenue.*

Advertisers demand best coverage

Since advertisers pay the bills, they demand best possible coverage of all important men in the field. So it's up to the publisher to publish the most readable magazine possible . . . then to insure coverage of the maximum number of the best readers.

You can't do that by selling subscriptions — sales costs are high — a large share of the subscribers cancel each year — and no matter how much time, money, and pressure is used

there are always some of the important men who will never buy.

As you can see, the most effective method of getting the kind of coverage advertisers want is (a) to hand-pick the most important men; (b) send the magazine to **ALL** these men; and (c) to make the magazine so interesting, so valuable that they will want to read it.

That's why . . .

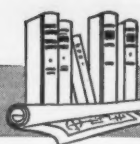
. . . Chemical Processing is sent only to qualified readers . . . selected management and technical key-men in the chemical industry; that's why you get Chemical Processing free — that's why we spend thousands of dollars on each issue to make it worth your time to read it. For you are an important reader in the chemical processing field.

Chemical Processing

Published by Putman Publishing Company

Creators of PUTMAN-STYLE Magazines
... terse, vital editorial; "hand-picked" circulation;
square, high-visibility format; quality readership;
hence more READER ACTION





Density-Temperature-Concentration Relationships for SILICONES

By D. S. DAVIS

Professor of Chemical Engineering
Virginia Polytechnic Institute

Accompanying nomograph enhances the utility of original tabular data¹ covering relationship between density, temperature, and concentration for the system: trichlorosilane-tetrachlorosilane. This chart is based on the equation

$$d = a + bx$$

where:

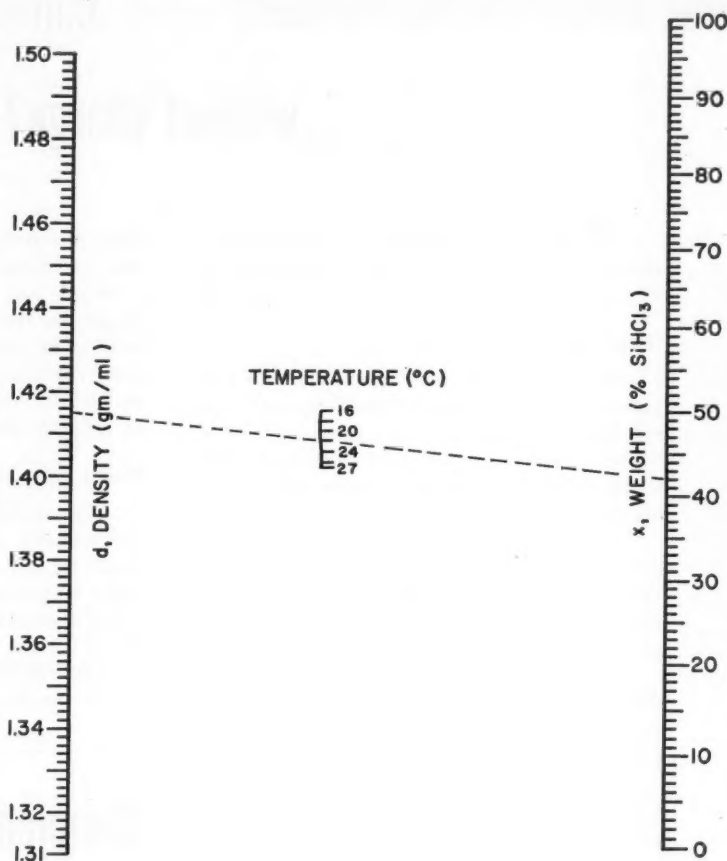
d = density of solution
gm/ml
 x = percentage trichlorosilane
wt %
 a, b depend on temperature
and have different values
above and below 60%.

Typical Example

What is the percentage of trichlorosilane in a trichlorosilane-tetrachlorosilane solution when density is 1.415 at 22°C? Connect 1.415 on the d -scale with 22 on temperature scale and read 42% trichlorosilane on x -scale.

LITERATURE CITED

¹GRADY, R. I., CHITTUM, J. W. and LYON, C. K., *Anal Chem*, Vol 23, No. 5, p 805 (1951).



CUT HERE AND FILE

AGILENE
(POLYETHYLENE)
AGILIDE
(NON-PLASTICIZED)
(POLYVINYL CHLORIDE)

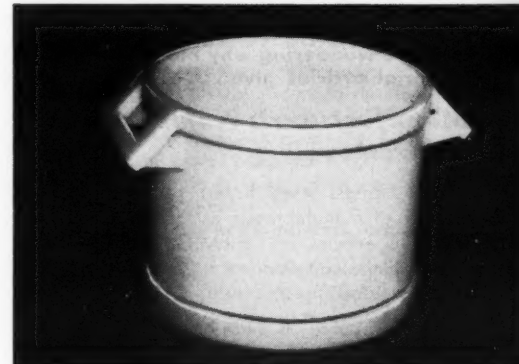
"Barriers AGAINST CORROSION"

PLASTIC FABRICATIONS FOR THE CHEMICAL HANDLING INDUSTRIES

MODERN MATERIALS OF CONSTRUCTION



Agile's high-grade modern thermoplastic construction materials — **AGILENE** and **AGILIDE**—fabricated by a unique combination of forming and welding processes in which we specialize, are your safeguard for an economical and properly engineered installation.



AGILENE Chemical vessels to meet specific processing requirements. The vessel pictured above is of 16 gallons capacity, $\frac{3}{8}$ " wall thickness sturdily reinforced throughout and used for transferring viscous, corrosive solutions.

Of all welded and formed construction, these high molecular weight virgin polyethylene containers are virtually unbreakable, light weight and corrosion proof throughout. **AGILENE** chemical vessels are ideal for the chemical and food processing industries and are available built to your specifications or as standard stock items.

American Agile Corporation

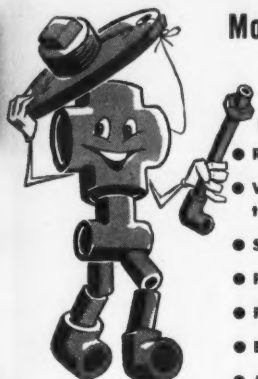
Plant and General Offices • 5461 Dunham Rd., Maple Heights, Ohio
Mailing Address, P. O. Box 168 • Bedford, Ohio

DEPT C-1

When inquiring check CP 1969 on handy form, pgs. 23

CHEMICAL PROCESSING

Inco-Cast Fittings to fit your need!



Monel® Nickel - Inconel®

Whatever you need—you'll probably find the answer is an Inco-Cast fitting.

Here's why —

- Resist most corrosives
- Withstand high and sub-zero temperatures
- Strong . . . tough . . . sound
- Protect product purity
- Pressure-tested
- Economical in cost
- All standard types and sizes in threaded and welding fittings
- Fast service on rated orders to all points from conveniently located distributor stocks
- Special shapes and sizes made to order

WRITE TODAY

for your handy price list catalog. It gives you full information. Sent promptly on request—no cost or obligation to you.



The International Nickel Company, Inc.
67 Wall Street, New York 5, N. Y.

When inquiring check CP 1970 on handy form, pgs. 2-3



All-Electric Floatless

LIQUID LEVEL CONTROLS

● Write for latest catalog covering the complete line of B/W Induction Relays, Induction Relay Switches, Relay Enclosures, Contactors and Starters, Multiple Pump Controls, Electrode Holders, Starter and Relay Combinations, Special Controls and Panels.

Controls will never trouble you, when you buy B/W

B/W CONTROLLER CORPORATION
2204 East Maple Road, Birmingham, Michigan

FIRST IN THE FLOATLESS CONTROL FIELD

When inquiring check CP 1971 on handy form, pgs. 2-3

AUGUST, 1954

NEW LITERATURE

Automatic pallet loading outlined in booklet

Illustrated bulletin gives general information on workings of automatic pallet loader. Different stacking arrangements and other specifications are included.

Bul "Series 200" is issued by Alvey Conveyor Mfg. Co., Dept. CP, 9308 Olive St. Rd., St. Louis 24, Missouri. Specify CP 1972 on handy form, pgs. 2 & 3.

Revised water works handbook offered

Revised edition of pocket-size water works handbook, with 28 added pages of water meter change gear charts and other features, has recently been issued. Cutaway drawings of eight principal kinds of meters are included.

In addition to specification tables for all meters, book includes such general information as standard specifications for cast iron and standard wrought iron pipe, table of equation of pipes, water meter testing hints and tables, instructions for reading meters, water use rate tables, flow charts, hose and fire data.

Also presented is basic information such as properties of water, weights and measures, and conversion tables.

Revised Water Works Handbook is available on request to Rockwell Manufacturing Co., Dept. CP, 400 N. Lexington Ave., Pittsburgh 8, Pa.

How stainless steel solved processing problems

Eight-page periodical deals with stainless steel castings, valves, and fittings, and describes how they have solved specific processing problems. One example tells how a ferric chloride feeding problem was resolved, while another covers a solvent extraction process.

"Newscast, Vol. 6, No. 2" is available from The Cooper Alloy Foundry Co., Dept. CP, Hillside, N. J. When inquiring specify CP 1973, pgs. 2 & 3.

Is this the way your plant gets its **MAKE-UP AIR**?

IF SO, YOU NEED

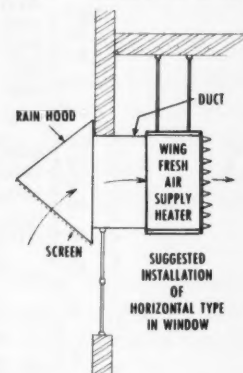
WING FRESH AIR SUPPLY HEATERS

WHEN air is exhausted from paint spray booths or other plant operations, it must be replaced. If no other means are employed, it rushes back through opened doors or windows, or seeps back through cracks and crevices. Your exhaust fans can't work properly or efficiently and your heating system is nullified. WING FRESH AIR SUPPLY HEATERS are the answer. They supply make-up air properly heated, they require no expensive duct work and the coils cannot freeze, regardless of weather, because full steam pressure is on at all times.



HORIZONTAL TYPE
WING FRESH AIR
SUPPLY HEATER

Write for
complete
information



SUGGESTED
INSTALLATION
OF
HORIZONTAL TYPE
IN WINDOW

L. J. Wing Mfg. Co.

179 Vreeland Mills Road
Linden, New Jersey

Factories at Linden, N.J. & Montreal, Can.
In Europe: Wanson, Brussels, Belgium

OUR 75TH YEAR

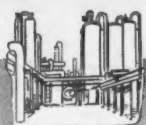
Wing

UNIT HEATERS FANS BLOWERS DRAFT INDUCERS TURBINES

SEVENTY-FIVE YEARS AGO

Demonstrating the new Edison phonograph. This simple hand-cranked machine, invented in 1877, was soon to be in every home, doing for sound what the invention of printing had done for literature. In 1879, L. J. Wing, another talented inventor of that period, was designing and building fans, steam engines and electric motors, which won many awards for the L. J. Wing Mfg. Co., today celebrating its 75th anniversary.

When inquiring check CP 1974 on handy form, pgs. 2-3



FLUORIDATION DOSAGE

Courtesy of B-I-F INDUSTRIES, INC*
Providence 1, Rhode Island

For convenience, this nomograph provides dosage in terms of five units and materials: pounds of fluoride ion, pounds of sodium fluoride, pounds of sodium silicofluoride, and pounds or gallons of hydrofluosilicic acid. This principle can be applied to other nomographs which form permanent data files.

Typical Example

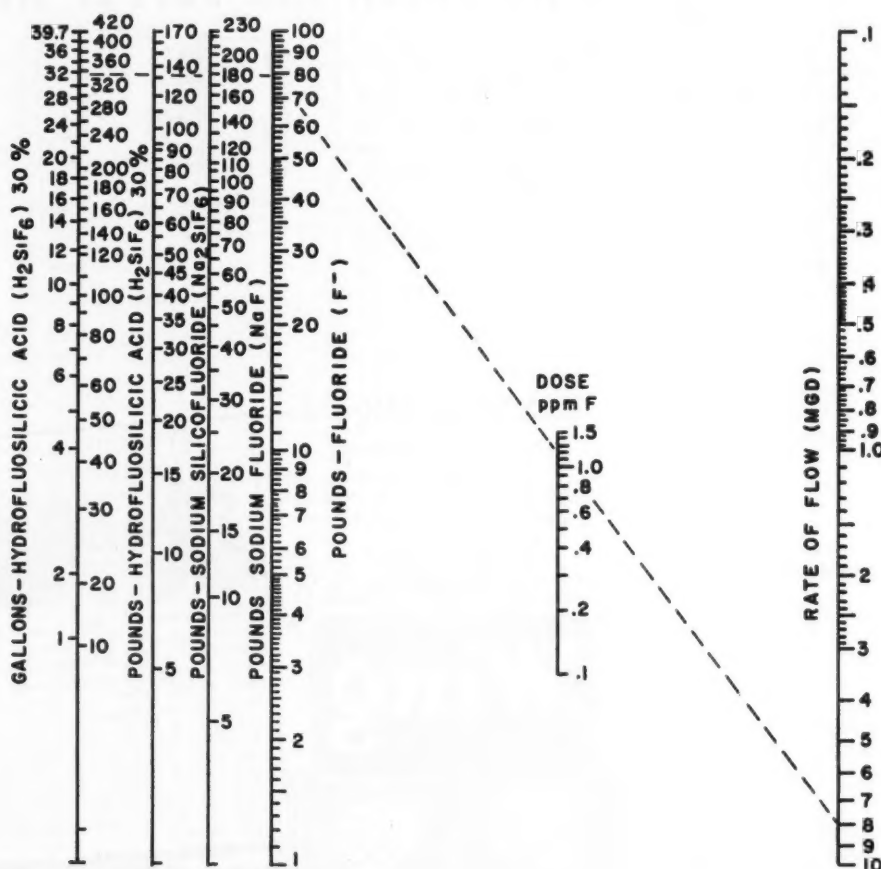
How much fluoride is required to increase fluoride content of an 8 million gallons per day flow by 1.2 ppm?

Connect 8 on the rate of flow scale with 1.2 on dose scale. Extend straight line to intersect the

pounds of fluoride scale. Required dose is seen to be 80 pounds. Equivalent amount of common fluoride sources can be found by laying straightedge perpendicular to scales and reading proper scale. Required dose could be attained, for example, with:

pounds of sodium fluoride	180.8
pounds of sodium silicofluoride	134.8
pounds of hydrofluosilicic acid (30%)	337.6
gallons of hydrofluosilicic acid (30%)	31.8

*This data is taken from B-I-F Industries "Keep Sheet No. 24" (copyright 1954 by B-I-F) and nomograph is reproduced here by permission of the copyright owner.



Pressure tube users benefit from **REPUBLIC** tests

This flanging test, performed prior to normalizing, isn't listed in A.S.T.M. A-214 specifications. But Republic Tubing passes it anyway, just as extra insurance that you'll get maximum service from ELECTRUNITE Carbon Steel Heat Exchanger Tubes. Afterward, every foot of every length of ELECTRUNITE is fully normalized.

ELECTRUNITE Heat Exchanger and Condenser Tubing also passes all tests listed in A.S.T.M. A-214. They include the hydrostatic or non-destructive electric test, flattening, reverse flattening and hardness tests.

The results pay off in dependable service. It is another reason why ELECTRUNITE Tubing has such a good performance record for over twenty years throughout the process industries. For more facts about Republic ELECTRUNITE Pressure Tubing, write for booklet BT-54.

REPUBLIC STEEL CORPORATION

Steel and Tubes Division
206 East 131st Street, Cleveland 8, Ohio
GENERAL OFFICES • CLEVELAND 1, OHIO
Export Department: Chrysler Building, New York 17, N. Y.



When inquiring check CP 1975 on handy form, pgs. 2-3
CHEMICAL PROCESSING

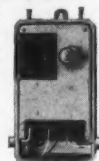
ACCURATE

Lumenite Electronic

LIQUID LEVEL CONTROLS

With no floats—no moving parts in the container (except non-conductive liquids) these Lumenite Electronic Liquid Level Controls maintain exact levels of water, milk, syrups, etc., in tanks, reservoirs, boilers, processors, freezers—either open or under high pressure.

Clean—Sanitary
Simple to Install
Require no Servicing



Write for Bulletin FLM—on Liquid Level Controls
Bulletin ITC—on Ice Thickness Controls
Bulletin FN—on Non-Conductive Liquids

Lumenite Automatic TIMING CONTROLS

Lumenite Timers are the simplest, sturdiest and longest life. Accurate to fractions of second, they speed and make more accurate all types of timed production.

For Details ask for
Bulletin LT—Standard Time Switches
Bulletin CR—Cycle Repeating
Bulletin PC—Program Clocks
Bulletin R—Time Delay Relays
Bulletin RMC—Auto. Reset Timers
Bulletin ET—Electronic Timers



Lumenite Electronic Company
407 S. Dearborn St., Chicago 5, Illinois

When inquiring check CP 1976 on handy form, pgs. 2-3

DEPENDABLE

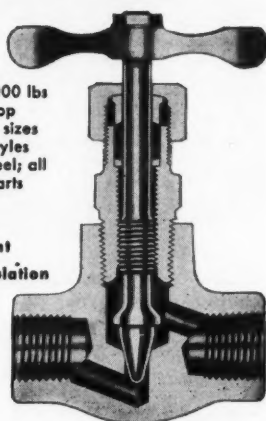
Protect Meters, Instruments

Edward Gage Valves

Moderately priced, these low cost compact valves find many applications for gage, meter and instrument service. Rated conservatively for 4000 lbs at 150F, 600 lbs at 750F, these drop forged steel valves are furnished in sizes from 1/8" to 1". Globe and Angle styles in three body materials—carbon steel; all parts 13% chromium steel; or all parts 18-8 stainless steel. Construction features include:

- light tapered body-bonnet joint
- semi-needle stem for fine regulation
- wide seat joint for tight seating
- bonnet and packing nut plated to reduce galling and corrosion

For complete information write for Catalog 104.



Another  Product

Edward Valves, Inc.

Subsidiary of ROCKWELL MANUFACTURING COMPANY
1230 West 144th Street, EAST CHICAGO, INDIANA

When inquiring check CP 1977 on handy form, pgs. 2-3

AUGUST, 1954

NEW LITERATURE

Shows how lift trucks aid material handling

Illustrated, four-page bulletin shows how mass material handling with manufacturer's equipment made annual savings of \$50,000 in chemical plant. Job study contains on-the-scene photos to illustrate handling techniques.

Job Study 130 is available from Towmotor Corp., Dept. CP, 1226 E. 152nd St., Cleveland 10, Ohio. When inquiring specify CP 1978 on handy form, pages 2 and 3.

Stop condensate corrosion with filming amines

Four-page reprint of technical paper describes experiences with filming amines in control of condensate line corrosion. Various methods of minimizing boiler feedwater alkalinity are discussed. Approach to the problem is based on the deposition of a non-wettable film on the metal which is impervious to penetration by the condensate. Field results under various conditions are reported.

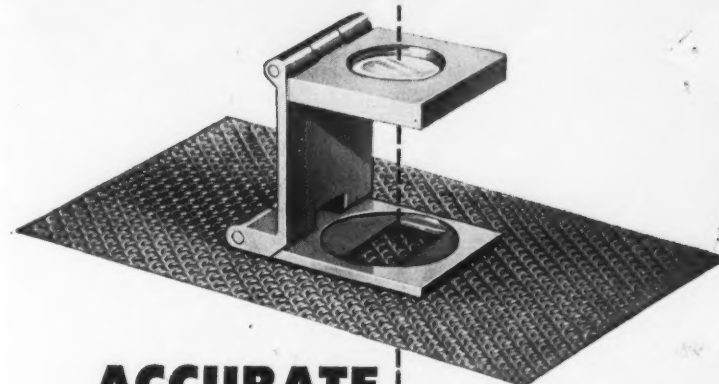
Technical paper 127 may be obtained by writing W. H. and L. D. Betz, Dept. CP, Gillingham & Worth Sts., Philadelphia 24, Pa. When inquiring specify CP 1979, pages 2 and 3.

Closing of cartons briefly outlined

A series of stapling machines handling single-end closings of partial or full-overlap cartons, telescope or center-slotted cartons of fiber or corrugated board, is outlined in eight-page bulletin. Operating specifications and space requirements are included. Series described has models with two stapling heads and models with one stapling head. Photos illustrate text.

Bul PR/601 is issued by International Staple & Machine Co., Dept. CP, 801 Herrin St., Herrin, Ill. When inquiring specify CP 1980 on handy form, pages 2 and 3.

An Important Wire Cloth Check Point



ACCURATE MESH COUNT

It follows that when you are screening material to get solids of a definite size, the accuracy of your end product depends on the accuracy of the mesh you use. If you think you are using a screen with 0.012" openings, when in reality you are using a screen with openings measuring 0.0185" (both of these openings are possible in 40 x 40 mesh cloth), the size of your product may not meet your process specifications.

Newark Wire Cloth is consistently accurate. Our slogan "Newark for Accuracy" is not just words—it's a true description proved again and again over our more than 75 years of experience in making wire cloth.

We make wire cloth accurately woven from all commercially used metals in sizes ranging from 4 inches (space cloth) to 400 mesh.

We catalog some 5,400 different combinations of wire gage and mesh. Let us quote on your requirements. When writing, please give us details on your process.

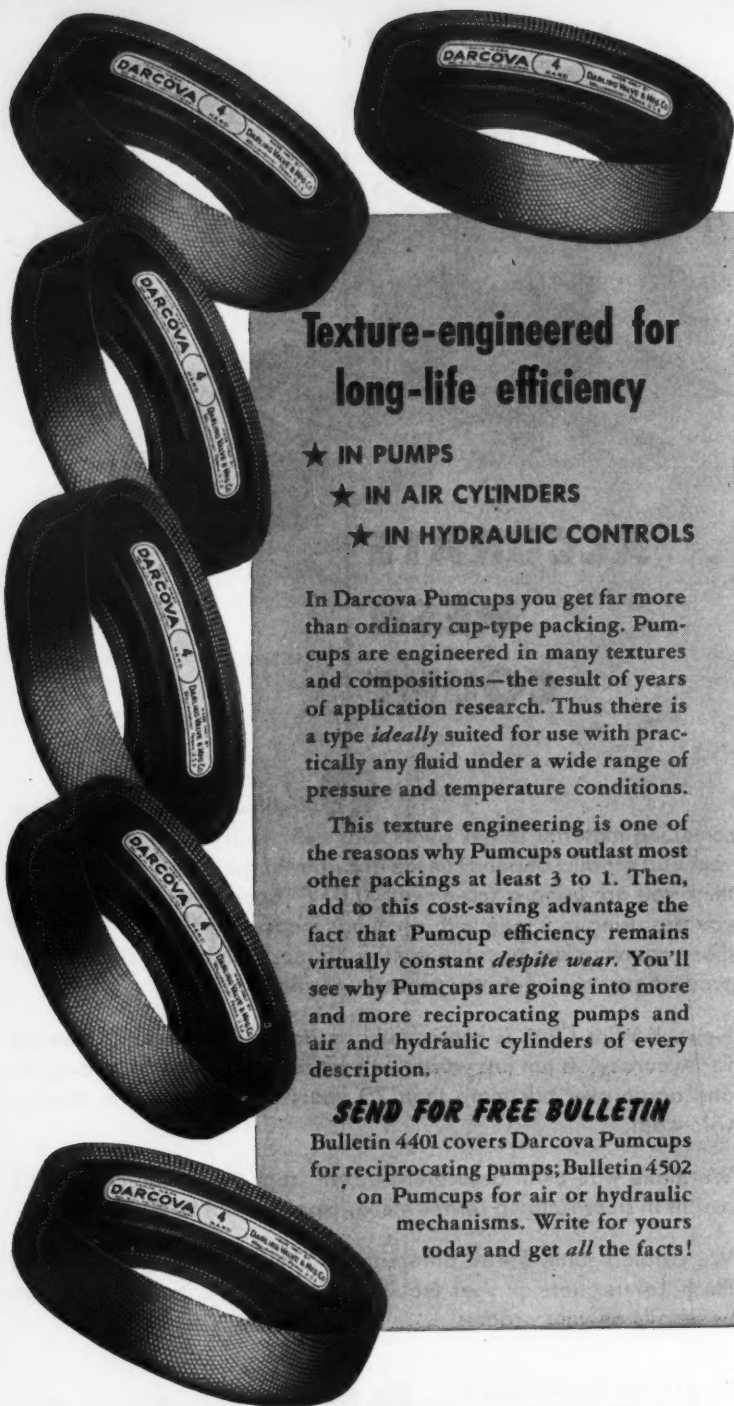
Send for our New Catalog E.



**Newark
Wire Cloth
COMPANY**

351 VERONA AVENUE • NEWARK 4, NEW JERSEY

When inquiring check CP 1981 on handy form, pgs. 2-3



Texture-engineered for long-life efficiency

★ IN PUMPS

★ IN AIR CYLINDERS

★ IN HYDRAULIC CONTROLS

In Darcova Pumcups you get far more than ordinary cup-type packing. Pumcups are engineered in many textures and compositions—the result of years of application research. Thus there is a type *ideally* suited for use with practically any fluid under a wide range of pressure and temperature conditions.

This texture engineering is one of the reasons why Pumcups outlast most other packings at least 3 to 1. Then, add to this cost-saving advantage the fact that Pumcup efficiency remains virtually constant *despite wear*. You'll see why Pumcups are going into more and more reciprocating pumps and air and hydraulic cylinders of every description.

SEND FOR FREE BULLETIN

Bulletin 4401 covers Darcova Pumcups for reciprocating pumps; Bulletin 4502 on Pumcups for air or hydraulic mechanisms. Write for yours today and get *all* the facts!

DARLING VALVE & MANUFACTURING CO.
Williamsport 4, Pa.



PUMCUPS

When inquiring check CP 1982 on handy form, pgs. 2-3

NEW LITERATURE

UV stabilizers described

Two ultraviolet absorbers, Uvinul 400 and Uvinul 490, are dealt with in 20-page notebook. Offered as a means of controlling harmful effects of UV radiations, compounds can be used either in protective coatings or incorporated directly into materials. Light absorption characteristics are presented graphically for the wavelength range of 230 to 600 millimicrons. Four-color center panel is a schematic diagram of electromagnetic spectrum from 0.0001 millimicrons to 5,000,000 meters wavelength.

"Uvinuls" is issued by Antara Chemicals, a sales division of General Aniline and Film Corp., Dept. CP, 435 Hudson St., New York 14, N. Y. When inquiring specify CP 1983 on handy form, pages 2 and 3.

Specs on lab ovens presented in catalog

Laboratory ovens, sterilizers, incubators, and related equipment are covered in illustrated 36-page catalog. Complete specifications for all models are given in tabular form for quick reference.

Cat 331 is issued by Precision Scientific Co., Dept. CP, 3737 West Cortland St., Chicago 47, Ill. When inquiring specify CP 1984 on handy form, pages 2 and 3.

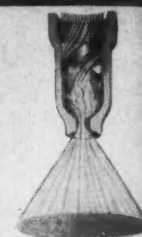
Corrosion-resisting coatings covered in bulletin

Applications and uses of a wide variety of corrosion-resisting coatings are described in 4-page bulletin. Phenolic, furan, neoprene, vinyl, rubber, and epoxy coatings are covered. Recommended number of coats, estimated life in specified services, and other factors are presented in tabular form.

Bul 100 is issued by Carboline Company, Dept. CP, 331 Thornton Ave., St. Louis 19, Mo. When inquiring specify CP 1985 on handy form, pages 2 and 3.

SPRAYING SYSTEMS CO.

SPRAY NOZZLES



exact performance for every need

Choice of thousands of standard spray nozzles gives you exact spray pattern, capacity, impact and atomization. **PROMPT** . . . often immediate delivery from stock.



BE SURE TO WRITE FOR . . .
the most complete spray nozzle catalog ever printed . . . forty-eight pages of detailed information. Write for your free copy of Catalog No. 24.

SPRAYING SYSTEMS CO.
3216 Randolph Street • Bellwood, Illinois



When inquiring check CP 1986 on handy form, pgs. 2-3

PLATECOIL

(REPLACE PIPE COILS)

cost less than fabricating pipe coils in your own plant

You can buy Platecoils for less money than it costs to fabricate pipe coils in your own plant. You also save critical steel because Platecoils require less than 1/2 the steel used in pipe coils of the same surface area. Installation takes far less time as Platecoils are mounted on simple hangers instead of the complicated racks needed for pipe coils. They take 50% less space.

Send for complete technical manual and descriptive Bulletin No. P54



When inquiring check CP 1987 on handy form, pgs. 2-3

CHEMICAL PROCESSING

NEW LITERATURE

Chemistry of melamine summarized in text

Comprehensive text includes sections on applications, specifications, physical properties, chemistry and structure, toxicity, and test methods for melamine. An extensive bibliography is also included in the 56-page booklet.

"The Chemistry of Melamine" is available on letterhead request from American Cyanamid Co., Dept. CP, 30 Rockefeller Plaza, New York 20, N. Y.

Offer free size reduction testing services

Laboratory services available for testing applications of size reduction, continuous mixing and dissolving, and heat exchange equipment are described in four-page illustrated booklet.

Testing is done without charge. Units used can be installed for actual production on trial-rental plan basis, if desired.

Bulletin includes partial listing of products tested, ranging from ammonium sulfate to whale meat.

Bul 200 is issued by Rietz Manufacturing Company, Dept. CP, 150 Todd Road, Santa Rosa, California. When inquiring specify CP 1990 on handy form, pages 2 and 3.

Protection from solvents offered by paint

Synthetic rubber coating designed for protection from organic solvents is described in eight-page bulletin. Laboratory test data on a number of solvents resisted by the paint is presented. Instructions for use are also given. In addition, manufacturer's plastic paint and label varnish are covered in the bulletin.

"Varniton Protective Coatings" is issued by the Varniton Co., Dept. CP, 416 N. Varney St., Burbank, Calif. When inquiring reader may simply specify CP 1991 on handy form, pages 2 and 3.

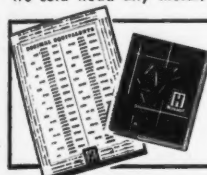


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HASSALL Cold Headed Parts and Fasteners

Our BIG BUSINESS is making small parts by the thousands... cold forged parts which are usually lowest first cost, lowest assembly cost, and strongest for longest service life.

A quotation from us won't cost you a cent but it's very likely to show you a much LOWER COST source of supply for any small metal part or fastener you are using in your product. We cold head any metal.



NEED a good 3 color decimal equivalent chart? Yours without obligation... just drop us a card. Complete catalog on request.



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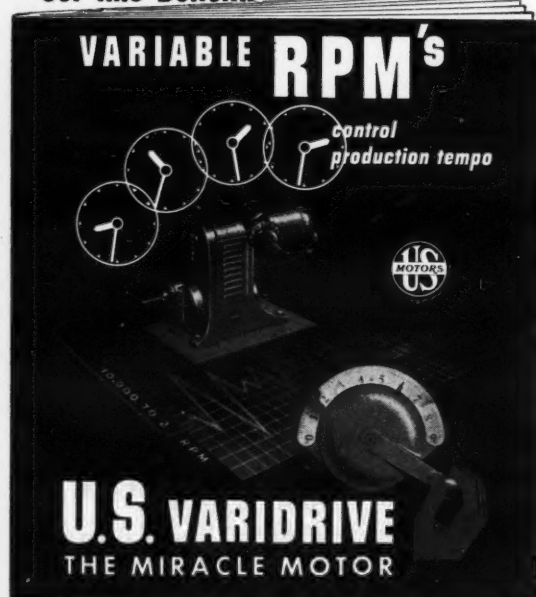
JOHN HASSALL, INC.

P. O. Box 2196

Westbury, L. I., New York

When inquiring check CP 1988 on handy form, pgs. 2-3

Get this Bulletin



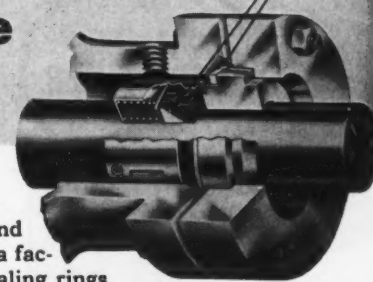
With infinite variable speeds, The U. S. Varidrive Motor will boost your production, increase operator's efficiency and produce better quality work. 2 to 10,000 r.p.m. ¼ to 50 hp. Request new Bulletin.

U. S. ELECTRICAL MOTORS Inc.
Box 2058, Los Angeles 54, Calif. Milford, Conn.

When inquiring check CP 1989 on handy form, pgs. 2-3

AUGUST, 1954

new mechanical seal JOHN CRANE with **TEFLON** Solves Corrosion and Temperature Problems...



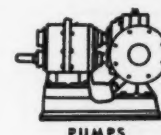
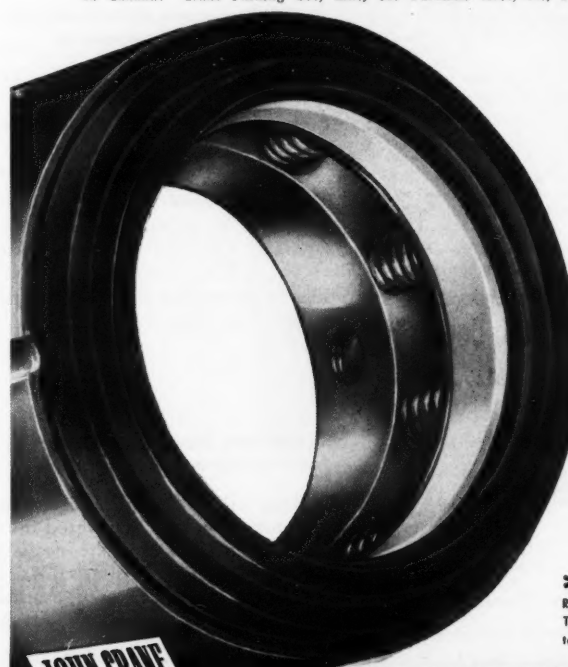
With the new Type 9 John Crane Mechanical Seal, proper sealing of chemicals and corrosive liquids is no longer a factor. Its flexible wedge and sealing rings are molded of the remarkable new plastic Teflon, which is not affected by any industrial chemical.

The successful development of two years research and field testing, this revolutionary seal handles corrosive liquids never before controlled effectively by conventional, flexible type mechanical seals. Thus, John Crane designing experience is effectively combined with the unique properties of Teflon: chemical inertness, extremely low friction and high heat resistance. Type 9 Seal can be employed at temperatures up to 500°F.

WRITE TODAY FOR NEW BOOKLET

describing the John Crane Type 9 Shaft Seal. Crane Packing Co., 1821 Cuyler Ave., Chicago 13, Illinois.

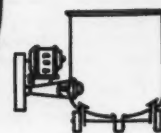
In Canada: Crane Packing Co., Ltd., 617 Parkdale Ave., N., Hamilton, Ont.



PUMPS



SPEED REDUCERS



MIXERS AGITATORS

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Registered DuPont
Trade-mark for
tetrafluoroethylene resin



CRANE PACKING COMPANY

When inquiring check CP 1992 on handy form, pgs. 2-3

NEW! More Resilient!

LUBRICATED TEFLON IMPREGNATED ASBESTOS PACKING



**The Perfect Seal
Against Acids, Alkali, Solvents!**

**HOT — COLD — CONCENTRATED — DILUTED
TEMPERATURES FROM —150° F. TO +500° F.**
Specify Style No. 401 for everything but molten alkali metals, fluorine, hot phosphoric acid and hydrofluoric acid. (Specify Style No. 402 Lubricated Teflon Blue Asbestos Packing without glass fiber core for hot phosphoric acid and hydrofluoric acid).

When Teflon Packings fail it can only be due to
(1) Lack of resiliency
(2) Lack of lubrication
(3) Cold flow
(4) Expansion

Flexrock has licked them all with Style #401. Don't count Teflon out until you've tried it — at our expense — wherever Teflon Packings have failed in the past.

We'll gladly send you literature but you can't pack valves or pumps handling hard-to-hold acids, alkali, or solvents with a catalog — only #401 itself will do the job.

Use the coupon to order 10 ft. of any size (made 1/8 inch to 1 inch in gradations of 1/8 of an inch) and if it doesn't work to your satisfaction we'll cancel the invoice. You'll be surprised at its first cost — it's considerably lower than any other Teflon Impregnated Packing on the market.



**MECHANICAL PACKING DIVISION
FLEXROCK Company**
3611 Filbert St., Phila. 1, Pa.

Mechanical Packing Division
FLEXROCK COMPANY
3611 Filbert Street, Philadelphia 1, Pa.

☐ Please send further information.
☐ Ship 10 ft. length ☐ #401 or ☐ #402 size on memo invoice.

Name
Company
Address
City Zone State

Please clip coupon to Company letterhead

When inquiring check CP 1993 on handy form, pgs. 2-3

NEW LITERATURE

Describes features, advantages of IR spectrophotometer

Brochure, illustrated in two colors, points out features of double-beam infrared spectrophotometer. Specifications for unit are given in compact table. Accessories for unusual infrared studies are also pictured and described.

Brochure on Model 21 Infrared Spectrophotometer is issued by Perkin-Elmer Corp., Dept. CP, Norwalk, Conn. When inquiring reader may simply specify CP 1994 on handy form, pages 2 and 3.

Trouble-free service given by regulating valves

Pressure-regulating and relief valves which give trouble-free service are described in 24-page catalog. General description and section on valve selection is followed by pages of detailed specifications on valves for various applications. Line drawings illustrate text. Tabular data is presented and includes a table on the thermodynamic properties of saturated steam.

Cat 207 is issued by Schade Valve Mfg. Co., Dept. CP, 2527-2537 N. Bodine St., Philadelphia 33, Pa. When inquiring specify CP 1995 on convenient Reader Service slip, pages 2 & 3.

Presents recent developments in laboratory equipment

Illustrated two-color bulletin of 24 pages covers new developments in field of laboratory equipment and supplies. Although produced by scientific glass supplier, bulletin lists laboratory equipment made by other manufacturers.

"What's New for the Laboratory" (No. 20) is issued by Scientific Glass Apparatus Co., Inc., Dept. CP, 100 Lakewood Terrace, Bloomfield, N.J. When inquiring specify CP 1996 on the convenient Reader Service slip which is located between pages 2 and 3.

Illustrates line of fittings for instrument tubing

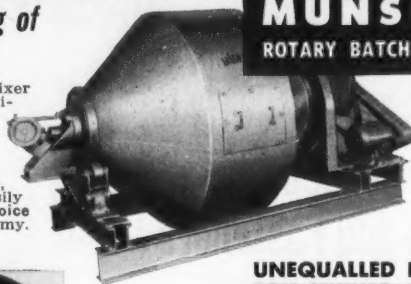
Line of tube fittings for corrosion-resistant instrument tubing is covered in two-page bulletin. Fittings illustrated are designed especially for use with manufacturer's plastic instrument tubing. Quick installation, reuseability, and leak-proof joints are among advantages of the fittings shown.

Bul L-9306 is available from Dept. C5, Dekoron Products Div., Samuel Moore & Co., Dept. CP, Mantua, Ohio. When inquiring specify CP 1997 on handy form, pages 2 and 3.

MIX IT better ... MIX IT faster

with a

MUNSON ROTARY BATCH MIXER



A Munson Rotary Batch Mixer provides faster, more intimate blending of dry ingredients — yet will not stratify ingredients or alter characteristics of basic components. Its famous 7-way mixing action, plus low operating costs easily makes the Munson first choice for performance and economy.

EXCLUSIVE MULTIPLE- BLENDING ACTION!



Lifters continuously cut out and lift ingredients as drum slowly revolves. Rotating cone tumbles stock to center. Conveyor flights on mixer shaft also agitate stock back to center — where mixing cycle repeats. Empties completely after every mix.

**UNEQUALLED FOR
DRY MIXING OF:**
Chemicals, Fertilizers,
Feeds, Cereals,
Gelatin, Glue,
Soap Compounds, etc.

Munson Rotary Batch Mixers can be fitted with internal spray for introduction of limited amount of liquid. Mixers range in capacities from 40 to 200 cu. ft. — for working floor, overhead or basement installation.

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Other famous MUNSON products:
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Attrition Mills, Rotary Crushers . . .

MUNSON MILL MACHINERY CO. Dept. P-854 Utica, New York

When inquiring check CP 1998 on handy form, pgs. 2-3

alphabetical index on page 198

... for alphabetical index of all processes, materials, services, and equipment discussed in this issue's editorial columns and advertisements, turn to page 198. "Quick-locator" starting on that page was a feature in **CHEMICAL PROCESSING** years ago. It means extra work for the Editors, but it helps you, the reader, in finding what you want . . . in a hurry!

Explains quick-opening doors for pressure vessels

Advantages of quick-opening doors for pressure vessels are outlined in eight-page bulletin. Applications of doors in chemical processing, food processing, and other industries are pictured.

Units described are designed for adaptation to both vertical and horizontal vessels. They range in size from 3 to 12' ID. Standard units are being used at temperatures up to 400°F and at pressures as high as 300 psi, vacuums as low as five microns. Specially designed doors for use at higher temperatures are available.

Bul 2435 may be obtained from Process Equipment Dept., Blaw-Knox Co., Dept. CP, 2076 Farmers Bank Bldg., Pittsburgh 22, Pa. When inquiring specify CP 1999 on handy form, pages 2 and 3.

Performance of cooling towers calculated from test data

Method of calculating cooling tower performance from test data (actual vs predicted) is presented in four-page bulletin. Line graphs and tables supplement text which discusses performance, test factors, capability and design, and actual test procedures. Even though processes involved in a cooling tower are complex, method of calculating performance is presented in simple terms.

"Calculating Cooling Tower Performance From Test Data" is available from The Marley Company, Dept. CP, 222 W. Gregory Blvd., Kansas City 13, Mo. When inquiring specify CP 2000 on handy form, pages 2 and 3.

Giant 600 ton/hr jaw crusher described in catalog

Line of improved overhead eccentric jaw crushers are discussed in two-color, 48-page booklet. Containing numerous illustrations, cutaways, and photographs, catalog explains advantages, design principles, construction features, operation, and applications.

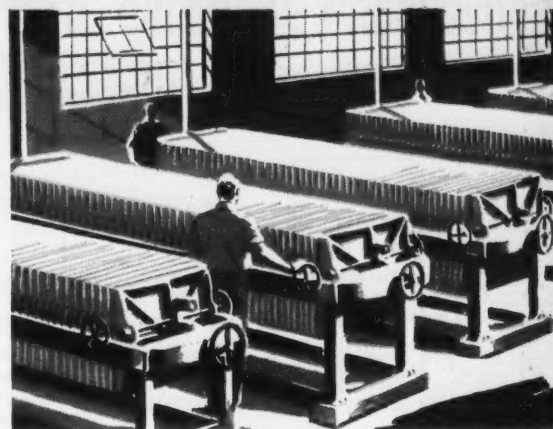
Several pages are devoted to firm's largest crusher, having 4-cubic-yard crushing chamber and calculated capacity of over 600 tons an hour. Dimensions and footing drawings for other 12 sizes are included. Tables give capacity, toggle and jaw plate selection, and specifications. Given in detail are suggestions on how to select proper size crusher and how to order.

Catalog also discusses five stationary primary plants (skid-mounted feeder and jaw crusher installations), with photographs, drawings, and tables.

Booklet 649 is issued by Pioneer Engineering Works, Inc., Dept. CP, 1515 Central Avenue, Minneapolis 13, Minnesota. When inquiring specify CP 2001 on handy form, pages 2 and 3.

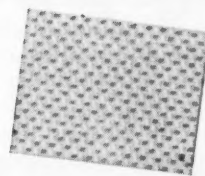


Cotton filter fabrics—widely used in beet sugar processing—are economical, durable, have high wet strength and good mechanical efficiency.



Acrylic type fibers when made up into filter fabrics are highly resistant to strong mineral acids under elevated temperature conditions such as used in certain dye filtration processes.

YOU GET EASIER CAKE DISCHARGE WITH THIS WELLINGTON SEARS FILTER FABRIC



Shown here in use is a press equipped with Wellington Sears filter fabric in a special construction of filament nylon, designed expressly for clay filtration. It is made to stand up under abrasion and flexing . . . and smooth enough for easy cake discharge.

Whatever your "tough problem" there's most likely a Wellington Sears fabric already in use—or one that we can develop—to solve it. There's the confidence in over a century of industrial fabric experience to back up that statement.

Wellington Sears cotton and synthetic filter fabrics are made available to the processing industries through leading filter cloth specialists. Write us for names of those serving your area.



Wellington Sears

A SUBSIDIARY OF WEST POINT MANUFACTURING COMPANY

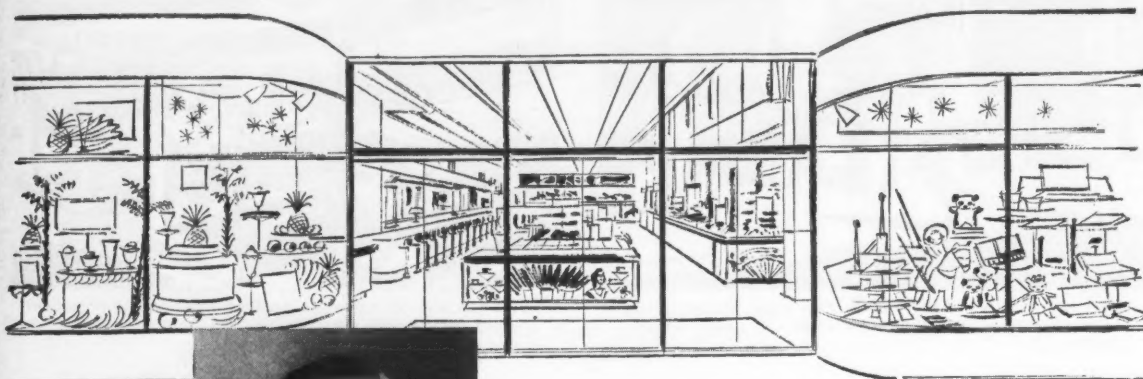
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When inquiring check CP 2002 on handy form, pgs. 2-3

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"The key men and women of our organization

*regularly and thoroughly read Business Publications
...especially articles covering business trends in mer-
chandise and developments in the retail variety field."*

To carry Mr. Williams' thought a step further, men and women who have to keep their thinking a step ahead of their work have one common characteristic. They read thoroughly the publications that give them the most help.

Just as the Kresge executives follow their business publications for trends and developments in the lines of their special interests, so leaders in every field of business and professional activity study each issue of the business periodicals in their own fields.

Such regular and thorough reading is a tribute to the ability of editors and special writers to think in terms of tomorrow. Regular and thorough readership means, too, that the advertising pages of the Business Press form a direct sales channel for products and services that are sold to business and professional men.



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The national association of publishers of 165 technical, professional, scientific, industrial, merchandising and marketing magazines, having a combined circulation of 3,849,056...audited by either the Audit Bureau of Circulations or Business Publications Audit of Circulation, Inc....serving and promoting the Business Press of America...bringing thousands of pages of special-

ized know-how and advertising to the men who make decisions in the businesses, industries, sciences and professions...pin-pointing your audience in the market of your choice. Write for list of NBP publications and the latest "Here's How" booklet, "How We Use the Business Press and Why" by William C. Sproull, Director of Advertising of the Burroughs Corp., Detroit.



NEW LITERATURE

Gives detailed specifications on diaphragm motor valves

Catalog of 36 pages describes and illustrates diaphragm motor valves with double-seated, single-seated, low-flow, Venturi and three-way bodies. Complete specifications and features of each unit are given.

Cat 800 is available from Industrial Division, Minneapolis-Honeywell Regulator Co., Dept. CP, Wayne and Windrim Avenues, Philadelphia 44, Pa. Specify CP 2003 on handy form, pages 2 & 3.

Folder gives operating data on electron microscopes

Features of manufacturer's line of electron microscopes, with typical applications, are given in four-page folder. Data covers viewing screen, accelerating potential, magnification, electron diffraction, focus determination and control, image stability, and resolution.

"Some Reasons Why the EM-75 and EM-100 Electron Microscopes Deserve Your Consideration" is issued by Research & Control Div., North American Philips Co., Inc., Dept. CP, 750 S. Fulton Ave., Mount Vernon, N. Y. When inquiring specify CP 2004 on handy form, pages 2 and 3.

Heat exchangers for corrosives at high temperatures

Four-page bulletin explains how 15% acid savings are being made in installations in which heat exchangers with Karbate tubes are being used. Units described are designed for handling acids and other corrosives at high temperatures.

"Hi Temp Heat Exchangers" is issued by Nukem Products Corp., Dept. CP, 111-119 Colgate Ave., Buffalo 20, N. Y. When inquiring specify CP 2005 on handy form, pages 2 and 3.

"Packaged" roller gear units mountable in any position

Completely housed roller gear drive units available in a wide range of standard and semi-standard models for most indexing requirements are described in 26-page bulletin. "Packaged" units presented offer selective assembly for any combination of directions of rotation, and for location of shaft extensions. Design permits units to be mounted in any position and fastened by any of five sides. Literature also features a section on load requirement calculations in selection of correct standard or semi-standard roller gear drives.

Cat 104 is issued by Roller Gear Division, Ferguson Machine and Tool Company, Dept. CP, Box 191, St. Louis 21, Missouri. When inquiring specify CP 2006 on handy form, pages 2 and 3.

Convention & Exhibit Schedule 1954

Aug. 17-19. Fifth Western Packaging and Materials Handling Exposition, San Francisco Civic Auditorium, San Francisco, Calif.

Aug. 23-25. Fourteenth Annual Appalachian Gas Measurement Short Course, West Virginia University, Morgantown, West Virginia.

Aug. 25-27. Western Electronic Show and Convention, Pan-Pacific Auditorium, Los Angeles, California.

Sept. 1-16. International Electrotechnical Commission, Golden Jubilee Meeting, Philadelphia, Pa.

Sept. 10-11. Chemical Institute of Canada, Second Western Regional Conference, Vancouver, B. C.

Sept. 12-17. American Chemical Society, 126th National Meeting, New York City.

Sept. 12-16. American Institute of Chemical Engineers, District Meeting, Hotel Colorado, Glenwood Springs, Colorado.

Sept. 15-17. American Association of Textile Chemists and Colorists, Atlanta Convention, Atlanta, Ga.

Sept. 15-21. Instrument Society of America, First International Instrument Congress and Exposition, Philadelphia, Pennsylvania.

Sept. 17-18. Ninth Annual Calorimetry Conference, General Electric Research Laboratory, Schenectady, New York.

Sept. 22-24. Material Handling Institute, Fall Meeting, Skytop Lodge, Skytop, Pa.

Sept. 23-24. National Flexible Packaging Association, Fall Meeting, Moraine on the Lake, Highland Park, Illinois.

Oct. 7-8. Commercial Chemical Development Association, Annual Fall Meeting, Bedford Springs Hotel, Bedford, Pennsylvania.

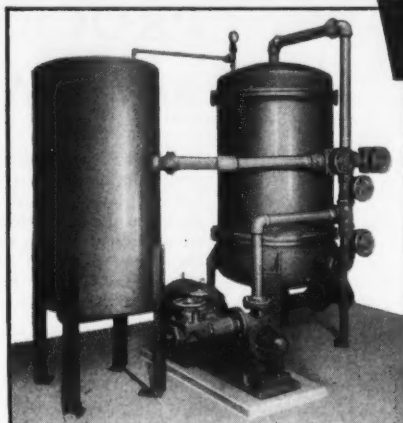
Oct. 12-15. Eighth National Chemical Exposition, by the Chicago Section of the American Chemical Society, Chicago Coliseum, Chicago, Illinois.

Oct. 13. American Institute of Chemical Engineers, Symposium on Petroleum Chemicals, Hotel Statler, New York City.

Oct. 18-22. Forty-second National Safety Congress and Exposition, Chicago, Illinois.

Oct. 21-23. Eighth New England Conference of the American Society for Quality Control, Ten Eyck Hotel, Albany, New York.

WAGNER BROTHERS FILTERS OFFER CHEMICAL PROCESSORS



DOUBLE ECONOMY

LOW OPERATING COST • LOW MAINTENANCE COST

CONSIDER TWO FACTORS BEFORE YOU SPECIFY FILTERING EQUIPMENT:

- 1 The gallons of solution which can be efficiently filtered in a given period of time.
- 2 The cost of maintaining the filtering mechanism.

It's an established fact that Wagner Brothers Filters have a higher effective flow rate than any other equipment with equal filtration area . . . thus, gallon for gallon, it delivers more pure filtrate per hour at a lower unit cost. Sludge and other suspended matter (down to 1/10 micron) are removed when the

bath or solution is pumped through permanent membranes caked with a few cents worth of filter-aid (diatomaceous earth).

To clean, you simply turn a few valves and reverse the flow. Air bump backwash shocks the caked filter-aid from the membranes and through the sludge drain. Maintenance costs are reduced to 1/2 that of ordinary industrial filters since there is no messy replacement of bags, sheets or pads, no manual cleaning labor, no dismantling.

Standard models are available in capacities from 500 GPH up, filter areas from 3 to 100 square feet.

We design and build specials to suit your requirements. Write for detailed information and filtering questionnaire.

Wagner

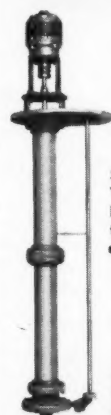
BROTHERS, INC.

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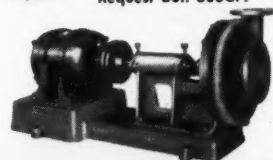
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When inquiring check CP 2007 on handy form, pgs. 2-3

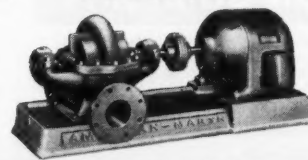
Why the RIGHT PUMP COSTS LESS — When it's an American-Marsh Pump!



Special — Q-2
Vertical Wet
Pit Centrifugal
for acids and
caustics.



RDM, Single Stage
End Suction Centrifugal
Request Bul. 300CP.



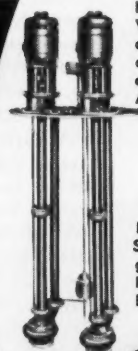
HLM Single Stage Centrifugal.
Request Bul. 350CP.

Pumps may "look alike"—but differ enormously in performance and economy when pumping a given liquid. Sometimes this is caused by "adapting" an unsuitable pump to a job.

At American-Marsh, scrupulous care assures that every pump—for whatever purpose—is the *right* pump through and through!

When you ask for recommendations, we analyze your problem carefully. Then we'll suggest the *right* design and size for your job . . . the *right* material for wetted parts (cast iron, bronze, stainless steel or other) . . . the *right* type of bearing, etc.

You're assured of a lasting solution to your pumping problem . . . and a pump that costs *less* for the service delivered. Call your A-M Representative now for recommendations.



NKS — Duplex
Vertical Non-
clog Sewage
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quest Bul. 325-
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ugal, Boiler
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CENTRIFUGAL, TURBINE, STEAM AND POWER PUMPS FOR TESTING, PROCESSING, BOILER FEED, FIRE PROTECTION, ETC.

When inquiring check CP 2008 on handy form, pgs. 2-3



8-ft. diam. by 80-ft. CO₂ absorber tower built by CB&I under contract from Foster Wheeler Corporation for the Grace Chemical Company at Woodstock, Tennessee.

Loaded and ready for shipment, the 8-ft. diam. by 80-ft. CO₂ absorber tower shown above is bound for Grace Chemical Company's Ammonia-Utca plant at Woodstock, Tennessee, near Memphis. In addition to the tower we also supplied the Grace Chemical Company plant with an aluminum tank, a Hortonsphere, an ammonia tank, a fuel oil tank, a water tank and a pump tank.

A variety of structures such as this, demonstrates Chicago Bridge & Iron Company versatility in engineering, fabricating and erecting welded steel plate structures. Facilities at all four of our plants are complete . . . including pickling and painting fabricated steel plates by the Horton Pickling Process and X-raying or stress-relieving structures to code requirements. We are thoroughly experienced in working with non-corrosive metals in either solid, lined or clad structures built to exacting standards.

When planning welded steel plate structures of any sort, take advantage of Chicago Bridge & Iron Company experience. Write our nearest office for information, estimates or quotations. There is no obligation on your part.

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Pittsburgh 19 3208 Alcoa Bldg.
Salt Lake City 4 507 West 17th South St.
San Francisco 4 1545-200 Bush St.
Seattle 1 1307 Henry Bldg.
Tulsa 3 1649 Hunt Bldg.

Plants at BIRMINGHAM, CHICAGO, SALT LAKE CITY, and GREENVILLE, PA.

When inquiring check CP 2009 on handy form, pgs. 2-3

Discussed in this issue —

PROCESSES, EQUIPMENT and MATERIALS

Use this "quick-locator" when you want information on a specific type of process, equipment or material mentioned in the processing stories or the advertisements in this magazine. Everything discussed in this issue is given here—if you want more data you can write manufacturer direct . . .

or turn to pages 2 and 3 and use the handy "Information Request Slip." This is a special service provided by the publisher . . . no obligation or charge, of course. The publisher contacts the proper manufacturers for you—information comes to you direct.

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Shown here is a light-weight, easily-erected PLA-TANK stack which handles fume exhaust at the new thorium plant of the Lindsay Chemical Co., West Chicago, Ill.

The stack has a 44" diameter, is 69' long including 90° elbow, cross run to fan chamber and riser beyond fan. There are inlets from three floors to handle exhausts from individual tank systems. Stack was prefabricated with flanges for fast installation.

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THE Chemical CORPORATION
63 Waltham Ave., Springfield 9, Mass.

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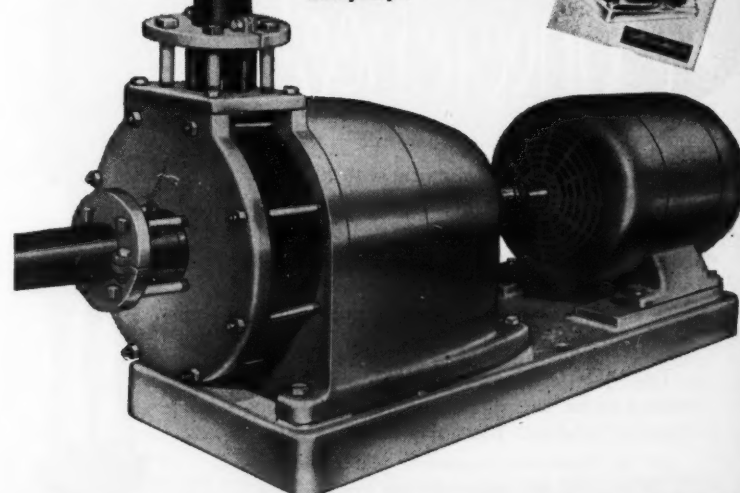
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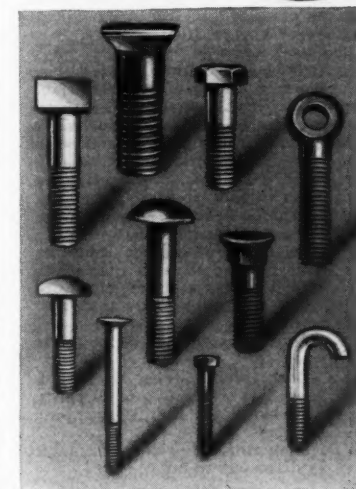
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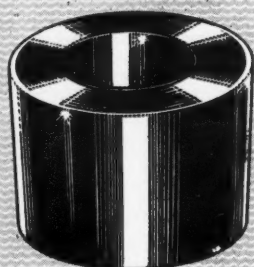
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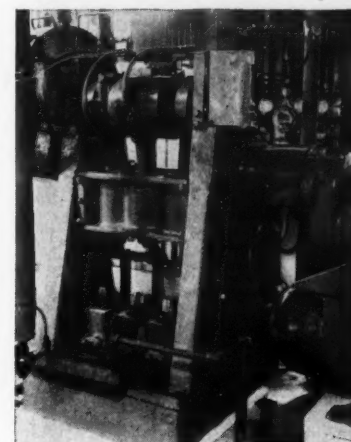
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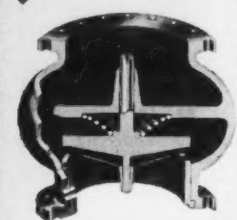
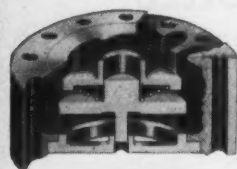
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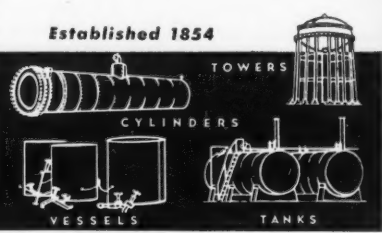


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Established 1854



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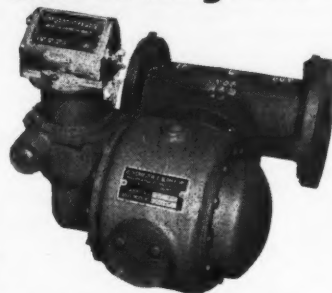
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CHEMICAL PROCESSING



Jacketed Pipe, Pumps, Valves and Fittings...



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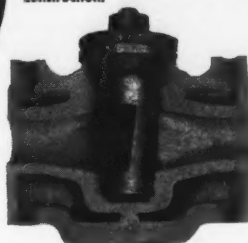
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At left: Jacketed 3-Way Plug Cock.

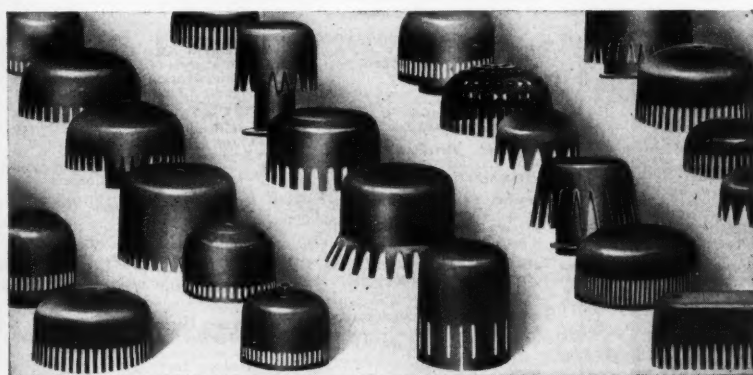
Below: Cutaway section of Jacketed Cock, showing packing gland construction.



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basic PUMP SELECTION GUIDE

Learn
BASIC FACTS
before
deciding
on TYPE of
PUMP

Fig. 19,488

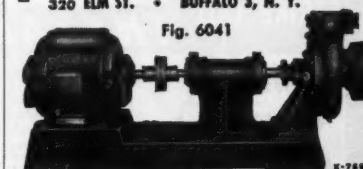
Nickel, Nickel Alloys and all other Castable-Machinable Metals and Alloys are used to build Taber Pumps.

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Fig. 6041



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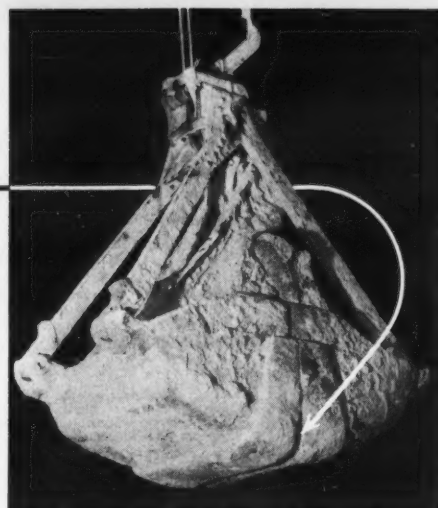
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Floor
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Firs on the beech

New developments in resins may lead to a great many more paper products, including paper bathing suits. What kinds of wood will be used? You can see the possibilities for a pun or two. "From cottons to cottonwood" or "firs on the beech" should give you a start. (*High Gradient*, No. 11, Feb. 1954)

Earthquake laboratory

As many as 1000 earthquakes a second are created by geophysicists at Columbia University. However, the tremors go no farther than disc-shaped models of the earth 20" in diameter and 1/16th of an inch thick. These simulated quakes allow scientists to deduce the interior makeup of the planet.

Laboratory stomach

A test-tube stomach has been devised to measure the nutritive value of whey, a by-product of cheese making. This stomach spares the animals ordinarily subject to testing. And, using the enzyme trypsin, experimental results agreed closely with those obtained in tests with rats.

Fiery diamonds form in rocket flame

Tests of rocket motors by General Electric Co. show that a long string of gem patterns appears inside each roaring rocket flame. Patterns result when hot gases collide with atmosphere. Once gases are cooled and slowed sufficiently to blend with atmosphere, diamonds trail off and disappear.

Lubrication at -100°F

Oil that lubricates even at 100 degrees below zero has been developed. Scientists expect this oil to eliminate one of the greatest obstacles to successful Arctic military operations. Many processing applications are also seen for the lubricant which is a development of the Elgin National Watch Co., Dept. CP, Elgin, Ill. . . . or for more information check CP 2029 on handy form, pages 2 and 3.

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